THE SOUTHERN PLANTER,

Devoted to Agriculture, Horticulture, and the Household Arts.

Agriculture is the nursing mother of the Arts.—*Xenophon.*

Tillage and Pasturage are the two breasts of the State.—*Sully.*

FRANK: G. RUFFIN, Editor. P. D. BERNARD, Proprietor.

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For the Southern Planter.

SCIENTIFIC AGRICULTURE.

INTRODUCTORY.

I design to present a series of short essays to the readers of the Planter, upon some of the elementary and fundamental truths of scientific agriculture. There are already a number of valuable works upon this subject, and some of them are written in such a style as to commend them to all classes of readers. I have reason to believe, however, that many farmers read the Planter attentively, who would not set themselves down to the study of a *book* upon scientific farming. To such farmers I desire particularly to address myself. If by the presentation of plain truths in a plain way, I succeed in awakening an interest on the subject of agricultural chemistry in any of your readers. I trust that they will be induced to consult the works of Norton, Johnston, &c. and to practise the course recommended by these distinguished authors.

Before entering upon the subject, however, it will be necessary to say something in relation to the properties of those substances which are most generally found in the soil and in the air, and which take part directly or indirectly in the mysterious processes of vegetation. But these remarks must be brief, too brief I fear to be of much service to those who have not turned their attention to the study of chemistry. And here let me recommend to any farmer who is not familiar with the principles of chemistry, to provide himself with a copy of such a work as Silliman's, Fownes' or Johnston's Chemistry for Colleges. He need not set himself down to the regular study of the science at all—let him keep the book by him for *reference* in his agricultural reading, just as many persons keep Webster's Dictionary by them in writing; and I promise him that before he is aware of it, he will be chemist enough to appreciate any agricultural production.

Oxygen is the first substance to be considered. This is an elementary body, that is, it contains but one kind of matter, and when not in combination with other bodies is always gaseous. It is universally diffused in nature, and constitutes about one-half of the ponderable matter of the globe. Its chemical attraction or *affinity* for most other elementary bodies is very remarkable; and there is scarce one of them with which it cannot be made to unite. When found in the earth it is always in a state of combination, and the number of these combinations is almost without limit. In the atmosphere it exists in the uncombined or *free* state, and very many of the chemical properties of the air are to be attributed to this gas. When oxygen unites with another body, the latter is said to be *oxidised*, and when the union is sufficiently rapid to produce heat and light, the substance oxidised undergoes *combustion*, or is burned. The decay of vegetable matter consists in the union of the oxygen of the air with the elements of the decaying body, constituting what may be called a slow combustion.

Hydrogen is also an elementary substance, and when not in combination with other bodies is always gaseous. It is given off in bubbles when a piece of zinc, or iron, is thrown into sulphuric acid, (oil of vitrol) diluted with seven or eight times its volume of water. It is the lightest substance in nature, is exceedingly inflammable, and produces *water* by its combustion.

Water is composed of one *atom*, or equivalent of oxygen, and one atom of hydrogen. It is universally diffused; possesses the power of absorbing small quantities of certain gaseous substances found in the atmosphere, and of dissolving more or less of the mineral matters contained in the earth.

Nitrogen is an elementary body which is remarkable for its negative properties, or for having very weak affinities for other bodies. It is a constituent of the atmosphere, where it occurs in the free state.

Its most important compounds are *nitric* acid and *ammonia*.

Nitric acid (aqua fortis) is a well known, and very strong acid. It is composed of one atom of nitrogen and five of oxygen. It has a strong affinity for a certain class of bodies called *bases* forming with them compounds known as the *salts* of nitric acid, or the *nitrates*. Some of these are of importance to the farmer, and will be mentioned as we progress.

Ammonia is a gaseous compound of one atom of nitrogen and three of hydrogen. It is called an *alkali* from its property of uniting with and neutralizing the properties of the strongest acids; with these substances it forms salts, most of which are soluble, while one of them is also very volatile. Ammonia is absorbed in large quantity by water, the solution is called liquid ammonia. It has a very pungent, peculiar odor, and powerfully affects the eyes and nose. It is given off in large quantity in the decay of animal matter, and in the fermentation of stable manure; and it is to this that the sore eyes and diseased lungs of horses kept in close stables, are to be attributed.

Carbon in the various forms of charcoal, lampblack, coke, &c. is too well known to require description. When burned, it unites with oxygen in the proportion of one atom of carbon to two of oxygen, and forms *carbonic acid*.

Carbonic acid is, when in a free state, a heavy gas, which extinguishes flame, and acts as a poison to the animal system if taken into the lungs. It is a feeble acid and may be displaced from its combinations with effervescence by any of the strong acids. Its salts are known as the *carbonates*. Water that has been lately boiled will absorb its own volume of the gas, and the pleasant taste of spring and well water is due to its presence. Its presence in water increases the solvent powers of the latter very much, a property which should not be lost sight of, as it is of great importance.

The *atmosphere* is the gaseous, elastic medium which surrounds the earth, and is principally made up of the two gases oxygen and nitrogen intimately mixed. More properly four-fifths of its volume is nitrogen, and the remaining fifth oxygen. It also contains small quantities of carbonic acid, and watery vapor, together with a very minute portion of ammonia, &c. but the volume of all these substances taken together, is so small as to make but a fraction of one per cent. of the whole atmosphere. It is to be remarked, however, that although the amounts of carbonic acid and watery vapor are so small, they are *invariably* present, and just as necessary to the atmosphere as oxygen itself. It is not supposed that the nitrogen of the atmosphere undergoes any appreciable change in quantity, or that it takes any part in the many chemical phenomena taking place in the atmosphere, but such is not the case with the other constituents. These substances if I may be allowed to use the term, are always at work; here one takes part in an action which removes it, there it is replaced; but in all these transformations, nature has so fixed her laws, as that nearly the same proportion of each shall be kept up—the balance is never destroyed. Combustion, respiration, and the decay of organic matter, remove oxygen from the atmosphere, replacing it by an equal volume of carbonic acid; while growing vegetation, as we shall see in our progress, absorbs carbonic acid by its leaves and roots, appropriates the carbon to its wants, and gives off the oxygen to be again converted into carbonic acid, and again to enter into the circulation of succeeding races of vegetables. Water is evaporated from the surfaces of the sea and earth, and returns to them again in the form of rain; thus any excess in the atmosphere is removed, and at the same time the surface of the earth, the rivers, &c. are kept supplied with water, and continue in a condition fitted for the existence and perfect development, of vegetable and animal life.

Let us now look at a few of these substances that are obtained exclusively from the earth; the most abundant and universally diffused of which is *silica*.

Silica is a compound of the body *silicon* and oxygen, in the proportion of one of the former to three of the latter. It occurs in the free state in the form of rock crystal, flint, white sand, &c. or in combination with the oxides of the metals, forming salts known as the *silicates*. These salts, except two, are remarkable for their insolubility.

Sulphur is an elementary body. It is very inflammable, and in burning yields a very unpleasant and irritating gas called *sulphurous acid*, which is composed of one atom of sulphur and two of oxygen. If the sulphur is oxidised in the presence of a base, it unites with oxygen in the proportion of one to three, forming *sulphuric acid* (oil of vitriol.) This acid is well

known as a powerful and highly corrosive acid, which unites with and neutralizes the strongest bases, forming salts known as the *sulphates*. Sulphur exists in many places in combination with iron, constituting sulphuret of iron; this sulphuret, on exposure to air and moisture, very frequently becomes oxidised, the sulphur taking the form of sulphuric acid, the iron that of the oxide of iron.

Phosphorus is an exceedingly inflammable body; in combustion, it unites with oxygen in the proportion of one atom of phosphorus to five of oxygen, forming *phosphoric* acid. Phosphoric acid is the combination of phosphorus found in nature, and is always in union with certain bases, forming the *phosphates;* it is universally diffused, but in very small quantity. The principal supplies of it are obtained from the bones of animals, which contain it in large quantity.

Potassa is the oxide or rust of the metal *potassium*, and is a powerful alkali, uniting with and neutralizing the strongest acids. Its most commonly occurring and well known salt, is the carbonate which is obtained from wood ashes by lixiviation and evaporation. When thus obtained it is called *potash*, and after solution in water, and a second evaporation, by which it is partially purified, it is called *pearlash*. The *nitrate of potassa*, (*nitre* or *saltpetre*) is another salt of importance, for as we progress we shall find that the presence of both nitric acid and potassa in the soil to be of the first importance.

Soda is the oxide of the metal *sodium*, and is very similar in its chemical properties to potassa. The *carbonate of soda* is gotten in large quantities from the ashes of seaweeds.

Potassa and soda unite with silica in certain proportions to form common glass, which it is well known is perfectly insoluble; they also unite with it in the soil, but in such proportions as to form the soluble silicates of these bases. It is by this means that silica is taken into the circulation, and is carried to all parts of the living plant.

Lime is the oxide of the metal *calcium*, and is gotten from its *carbonate*, common limestone. The carbonic acid is driven off during the process of burning, leaving what is called *quick* lime, which is a dirty white, brittle solid. When it is exposed to air, or water is sprinkled upon it, it heats, swells and falls down to a very fine pure white powder, which is *slaked* lime.

In the process of slaking, water unites chemically with the lime, and it becomes what chemists call a *hydrate*. It has a strong affinity for the acids, and forms with them the salts of lime. When lime is exposed to air and moisture, it gradually absorbs carbonic acid, and returns to the form of the carbonate. The carbonate of lime is insoluble in pure water, but soluble in water charged with carbonic acid; it has already been stated that spring and well water contain carbonic acid; hence we should expect to find more or less carbonate of lime in the spring and well water of all countries, in which lime abounds in the rocks or in the soils, and such is always found to be the case.

The *sulphate of lime*, (*gypsum*, or *plaster*) is a well known and very valuable salt of lime; it occurs in extensive beds in many parts of the world, is very slightly soluble in water, and may be detected in most springs and running water. The *phosphate of lime* is perhaps the most important salt of lime to the farmer, not that it is more necessary than some others, but because it is so scarce, and so difficult to replace, when exhausted from a soil by improvident cultivation. This substance is insoluble in water, but becomes slightly so in water charged with carbonic acid.

Magnesia is the oxide of the metal magnesium; it is known as a very fine, light, tasteless, white powder. It plays the part of a base, and forms with acids the salts of magnesia. The two most commonly occurring of these are the *carbonate*, and the *sulphate*, (epsom salts.) The carbonate is insoluble in pure water, but becomes slightly soluble in water which contains carbonic acid; the sulphate is very soluble. The carbonate of magnesia sometimes occurs associated with carbonate of lime in limestone, forming magnesian limestone.

Alumina is the oxide of the metal *aluminum*, and when pure is white. It has the properties of a base, forming salts with the acids. It occurs in great quantity in the earth in union with silica, forming *clay*. Pure clay is white; common clay is colored by the presence of small quantities of foreign matter. Clay has a powerful attraction for moisture, and for certain gases, as ammonia.

Iron is too well known to require description; in combination with oxygen it is universally diffused. The ore from which the principal part of the iron of commerce is obtained, is what chemists term the *peroxide*, and is a compound of two atoms of iron

to three of oxygen. Common iron rust, formed whenever iron is exposed to air and moisture, is this same oxide. This is also the form in which iron generally occurs in the soil, in clays, &c. communicating to them the various shades of red and yellow. There is another oxide, the *protoxide*, where the metal and oxygen are in the proportion of one atom of each; this is frequently in combination with sulphuric acid, constituting *sulphate of iron*, or common *copperas*.

Manganese is a metal which resembles iron in some respects; one of its oxides, the peroxide, is very generally diffused, but not in such quantities as the oxide of iron. The color of the oxide is black.

Chlorine is when pure an elementary, gaseous body; it has a yellowish green color, is very irrespirable, is a powerful bleaching agent, and is remarkable for its strong affinity for the other elementary bodies. Its combinations with the elements are called *chlorides*, some of which occur in nature. *Chloride of sodium* (common salt) is, as its name imparts, a compound of chlorine and the metal sodium. *Chloride of calcium* is a compound of chlorine and the metal calcium, the base of lime.

I have now given the names, and a few of the properties of those substances most important to be known before entering upon our subject; in future numbers I will endeavor to show how these substances, under the influence of heat, light, and the principle of life, keep up a vegetation which beautifies the earth, and supplies food to the myriads of beings that dwell upon it.

Note to the word AFFINITY.—*Affinity* is the force to which all chemical phenomena are due, and it is the attraction exerted between dissimilar particles of matter when brought very near to, or in actual contact with each other. Alcohol and water, for example, have an affinity for each other, and after mixing, cannot be separated without the utmost difficulty, because affinity has established a true chemical union. But if oil and water, which have no affinity for each other, are mixed, the mixture may be agitated for any length of time, and still the moment it is allowed a little repose, the oil will separate from the water and rise to the surface.

Note to the word EQUIVALENT.—The *equivalent* of a body expresses the relative proportion in which this body unites with others. For instance, oxygen unites with hydrogen in the proportion of eight to one, with carbon in the proportion of eight, or some multiple of it, to six, with nitrogen in the proportion of eight, or a multiple, to fourteen, &c.; the number eight is hence the equivalent of oxygen, that of hydrogen being regarded as unity. The equivalent is frequently called *atom*.

Note to the word SALT.—A *salt* is a compound body composed of an *acid* and base in chemical union, the base being in most cases the oxide of a metal. Common *plaster* is a true salt, the *sulphate of lime*, and its name is so framed as to indicate that it is a salt formed by the union of sulphuric acid and lime.

When a salt is composed of single equivalents of its constituents, it is said to be *neutral*, a *super* salt when the acid is in excess, and a subsalt when the base predominates.

For the Southern Planter.

GUANO.

Mr. Editor,—The article known as guano, variously pronounced (as *guanno*, *gauno*, *gwano*, but whose proper pronunciation, according to the best authorities to which I have had access, is *gwarno*,) [*whah*-no—ED.] has recently attained such importance in our country, as a fertilizing agent, that any information in regard to its origin, its early use, or its natural history, will doubtless interest the readers of your valuable journal.

With a view of contributing to their amusement and of exciting them to a further investigation of the subject, I offer the following:

The celebrated naturalist Cuvier, in referring to an analysis of the article, by the renowned chemists, Fourcroy and Vauquelin, say, "This analysis has so great a resemblance to that of pigeon's dung that there is reason to believe, with Mr. Humboldt, who brought this *guano* to Europe, that it is nothing but the *excrement of birds*, which frequent the islands of the South Seas, in immense numbers."

It had been doubted if the article was an animal substance; and if animal, whether it was composed of the decayed *bodies* as well as the excrements of the birds. By the investigations of the French chemists, and the still earlier researches of a learned Jesuit named Acosta, who published a work styled "THE NATURAL AND MORAL HISTORY OF THE EAST AND WEST INDIES," as long ago as the year 1604, it was ascertained that while there are bodies of birds mingled, to some extent, with their *dung*,

it is to this last named substance that the enriching property of the guano is mainly ascribable.

The learned author, above referred to, whose book was published in London two hundred and forty-six years ago, does not say to what particular kind of birds the world is indebted for this valuable manure.

I have elsewhere seen it stated that the bird itself was called *guano*. [We have heard that is the Spanish for dung.—Ed.] Whether this be correct or not I am not competent to decide. However this may be, I believe it is conceded that the fertilizing properties of the article are owing to the fact that the birds affording it, *fed on fish.*

The late Professor Benjamin Smith Barton, whose researches into the curious were prosecuted with great ardor and perseverance, was of the opinion that it is the deposit of the dung *from all the different species of sea fowl common to the coast of that region.*

When we regard the enormous piles of the article, rising as they do to mountain heights, the opinion of the learned Professor appears to be founded in reason.

That your readers may have a proper idea of the extent of these accumulations, I make the following extract from Acosta's book. After speaking of the birds of that country, which were remarkable for their beautiful plumage, he says:

"There are other birds at the Indies, contrarie to these, the which serve to no other use but for dung, and yet perchance, they are of no lesse profitte. I have considered this, wondering at the providence of the Creator, who hath so appointed, that all creatures should serve man.

"In some islands or *phares*, which are joyning to the coast of Peru, wee see the toppes of the mountaines all white, and to sight, you would take it for snow, or for some white land, *but they are heapes of dung of sea fowle*, which go continually thither: and there is so great abundance, as it riseth many elles, yea many launces in height which seemes but a fable—they go with boates to these islands, only for the dung, for there is no other profite in them. And this dung is so commodious and profitable, *as it makes* the earth yeeld great aboundance of fruite. They cal this dung *guano*, whereof the valley hath taken the name, which they cal *Limaguano*, in the valleys of Peru, where they use the dung, and it is the most fertile of all that countrie.

"The quinces, pomegranets, and other fruites there, exceede all other in bountie and greatness; and they say, the reason is, for that the water wherewith they water it, passeth by a land compassed with this dung, which causeth the beauty of this fruite. So as these birdes have not only flesh to serve as meate, their singing for recreation, their feathers for ornament and beautie, but also their dung serves to fatten the ground. The which hath been so appointed by the soveraigne Creator, for the service of man, that he might remember to acknowledge and be loyall to him from whom all good proceedes."

You will see from the above extract, Mr. Editor, that guano, although but recently introduced into this country, is "nothing new under the sun." We may reasonably infer, as the heaps of the article were piled mountain high two and a half centuries ago and constant additions have been since daily made to them, that we need entertain no apprehensions that the supply will fail.

If the above shall serve to interest or amuse any of your readers who have experimented with the guano, I shall think that they will be under some obligation to render me an equivalent service. I will not, however, claim it in *kind*, but ask that it be paid in *instruction.*

I hope that some of them will, through your columns, inform me as to the result of their experiments with this manure, on *corn* and *tobacco plants.* I desire information as to the *proper time* and *mode of applying* it as well as in relation to the effect produced.

I am your obedient servant,

THOMAS P. ATKINSON.

Danville, Va. June 7, 1852.

It is too late now to put it on either. On some future occasion we will publish directions, but very full ones may be found in the back numbers of the Planter for the last twelve months.

TO STEW DUCKS.—Take a duck, either wild or tame, split it down the back, make some stuffing with stale bread, the liver of the duck, spice, sweet herbs, onions, butter, pepper and salt, all chopped up together; fill up the duck with it and sew up the back; put it into a pot with water enough to cover it; stew it till the water is almost stewed away, then add a little wine and a lump of butter to what remains, which makes the gravy, and brown the duck.

For the Southern Planter.

MUTTON SHEEP—BREEDS AND MANAGEMENT.

Mr. Editor,—As you expressed a desire for me to write you an article on the subject of the mutton sheep, I shall attempt it, not with the expectation of contributing one item to the information of those who have heretofore made it a study, but solely for the benefit of such as have not thought the subject worthy of investigation. For the information here attempted to be given I am indebted mainly to the various authors on sheep husbandry, partly to observation and a little experience.

The English have divided sheep into three classes: the long, middle, and short or fine woolled.

The two former of these embrace all of the breeds best adapted to the shambles, and therefore are emphatically the mutton sheep. The fine woolled sheep require very different management, and are designed by Nature for a different purpose, but with them I have nothing to do under this head.

The breeds which have been found most profitable in our State are the Lincoln, the Leicester, the Cotswold, the New Oxford (a cross of the two latter), and the South Down. All of the above breeds have their peculiar merits, and each has its admirers. All of them are long woolled except the South Down, which has a middle wool.

Of the Lincoln I know very little, except that like all other animals of its native shire it is remarkably large. The Leicester is a very finished sheep, both in form and fleece, and was perhaps the favorite breed before the introduction of the Cotswold. The Leicester, or Bakewell, possesses all the requisites for a mutton sheep, save that it is delicate in constitution.

The pure blood Cotswold has been, in a measure, eclipsed by the New Oxford (a combination of the Cotswold and Leicester)—This is now, perhaps, the most highly approved breed in the United States. Its enormous carcass, capacity for fat, early maturity and weight of fleece, justly entitle it to high consideration from the farmers of the State. Its wool, though in length frequently from ten to fifteen inches, is yet comparatively fine, and is used in the manufacture of mouslin de lain and worsted fabrics. This breed has been brought to great perfection in our own State by Messrs. M'Cormick, Dr. William M'Guire and Col. Josiah W. Ware of Clarke county. No care or expense has been spared by Col. Ware in the improvement of his flock. Not content with the best blood to be obtained in the United States, he has imported from England at very high cost the successful competitors for prizes at the Royal Agricultural Show at Exeter. These sheep are beyond doubt the best in the world, as they are beyond competition. The fleece of the improved Cotswold varies from ten to eighteen and a half pounds of washed (on sheep's back) wool, according to the age and sex of the animal, and the carcass varies from one hundred and thirty to two hundred pounds neat, when well fattened.

The South Down is inferior to either of the above described breeds in size of fleece and carcass. It is, however, generally considered greatly superior in the quality of its mutton. Such is the estimation in which this mutton is held both in England and Scotland, I am told, that epicures buy it at a high price when the butcher leaves the head on the carcass, so as to certify his blood. The wethers at two years old, and well pastured, will weigh from eighty to one hundred and ten pounds neat, and the fleece, which is next to the Merino in texture, varies from five to eight pounds, according to sex and age. The writer is of opinion that as much mutton can be made from a given amount of pasturage and food from the South Down as from either of the larger breeds, with the ordinary management which we give to sheep in this State. The South Down from his closeness of fleece will endure cold and wet far better, and his greater activity enables him to live on thinner herbage.

In determining upon a breed of sheep it is of superlative importance that the breed should be adapted to the nature of the farm they are to inhabit—the kind of keep they will have, and the market they are designed for.

It must be remembered that the largest breeds require the most luxuriant pasturage in summer and the best food and shelters in winter. They must be kept on land which is dry and at the same time easy to travel over, as their size and construction impede locomotion greatly. The size of the flock must be proportioned to the extent of range they will have, most especially with the mutton sheep, as they are the most fastidious of all animals in taste, and will suffer great hunger before they will eat anything soiled by the hoof or otherwise.

It is impossible to state what quantity of land is necessary to graze one hundred sheep, as everything depends on the quantity of herbage the land will afford. It is sufficient to say that the mutton sheep requires an abundance at all times to bring him to perfection.

MANAGEMENT OF THE MUTTON SHEEP.

In this climate the strict observance of a few simple rules is sufficient to ensure success with any of the breeds of this variety. For the sake of convenience I will divide these into summer and winter management; premising as of first importance that no buck should be allowed to breed to his own offspring, and therefore it is most convenient to change him every two years. It has been well ascertained that the best economy is to buy the best bred and best formed bucks, with little regard to cost, as the prime cost will be amply repaid in the superiority of the first set of lambs. The time required to bring a flock to perfection, by the

use of thoroughbred bucks, is less than half where only grades are employed.

Winter management commences with the period when the buck should be put with the ewes. Supposing that he has been kept separate from the ewes the previous summer, and that the lambs had been weaned on the first of September previous, the best time for this purpose, all things considered, is the fifteenth of October. The period of gestation is about five months; the lambs may therefore be expected about the tenth of March. A buck in his prime will serve, on good pasture, seventy ewes in three or four weeks; at the expiration of which time he should be removed and put with the wethers in a secure field, until again wanted the following year. A greater number of ewes may be served by putting them to the buck in small numbers, say four or five at a time, and blacking the breast of the buck with lampblack and oil, by which means he will leave his mark. He should be well fed on grain during this time.

Sheep require very little dry food in winter, when the ground is not covered with snow, if they have a clover field or timothy meadow to range upon. The best dry food is clover hay or corn fodder; the next is oat or wheat straw or chaff. My experience is decidedly against timothy hay, particularly for pregnant ewes, having found it constipating, and therefore very dangerous. Shelters should be provided against bad weather, and where there are not better, those made with straw, so as to keep off the rain, are all sufficient. Too much pains cannot be taken to shelter sheep during rainy or snowy weather, more especially those breeds that carry heavy fleeces, which when saturated with water, will freeze, and thereby destroy the constitution of the animal, if not cause its immediate death.

I am satisfied that more than three-fourths of all the disease that the sheep is heir to, is referable to exposure in bad weather. When the ground is frozen or covered and access to green or succulent food cut off, it is all important to supply them with a few potatoes or apples cut up, cabbages, or pine tops. Where it is practicable, they should have the grazing of a wheat or rye field until the ground becomes soft. They will not do the slighest injury to the crop; on the contrary, if there is fly in the wheat the grazing will be very advantageous to it. Salt must be given once per week.

Summer Management.—The next important period in course is that of yeaning. The flock should now be placed in some convenient field, where they may be seen several times during every day. The fields should be free from ditches or creeks, as they are very liable to get into these in so helpless a condition that they will die before relief can be afforded — Hogs must be kept away as they will eat the lambs as fast as they are dropped. Crows are also very destructive to young lambs by picking out their eyes. Ewes frequently require assistance in bringing their lambs, and therefore should be watched closely. Yeaning usually requires from three to four weeks; this accomplished, the next thing to be attended to is castration and docking. This should not be postponed, as is usual, till shearing time, the weather being then frequently too warm; besides which the lambs should have time to recover from the wounds before shearing season.

Castration may be performed thus: The lamb being laid on his back, the person holding him catches one fore leg and one hind leg in each hand, the operator places his foot upon the tail; he then cuts off one-half the testicle bag and presses the testicle out, until the outside skin can be split sufficiently to allow the testicle to slip out; he then separates the skin at the connecting point, and drawing the testicle gently out, scrapes back the outside skin until the cord is reduced to a thread, when it must be severed. When both testicles are thus removed, the wound must be well smeared with a mixture of train oil and tar; a vessel containing which should be previously provided. This done the lamb should be removed to a block close by, to be docked—the same person holding him on his back as before, lays the tail straight across the block; the operator then takes an axe and lays it across the tail, one and a half inches from the root; he then strikes the axe with a mallet sufficiently hard to sever the tail at one blow. The oil and tar are immediately applied as before. If the owner uses an ear-mark it should be now given; but the writer is decidedly opposed to such marks, (unless made with a punch,) as nothing is more disfiguring to the animal than cropping the ears. The operation of docking contributes greatly to the beauty, cleanliness and health of the animal, and should be performed on all the flock in the manner above described. It may as well be omitted entirely as to leave a greater length of tail than one and a half inches.

At this time it is necessary to perform another act of mercy to the flock at large; this is tagging, which must be carefully and thoroughly performed with shears, removing all the wool between the hind legs, in danger of being clogged with manure, or which has already been saturated with blood at lambing, in order to keep off the maggot fly which is ever ready to attack the sheep upon the smallest pretext in warm weather.

Washing sheep requires much care and judgment. The state of the weather, and the condition of the animal, must be well considered. From the first to the fifteenth of May, we generally have weather suitable for this operation. A vat, ten feet long, three feet deep, and four feet wide, made like the forebay of a mill, with a draw-gate at each end, and fixed in the bank of an ice-pond, will answer the double purpose of a waste gate and sheep tub. A close pen being made near the pond, the sheep should be put into it with as little exercise as possible, and all pains taken to avoid heating the animal before he is put into the

water. The hands employed can stand outside the vat, and wash three at a time, not more than five minutes being necessary for them to remain in the water. They must then be kept on a clean grass field for several days, until quite dry. Shearing is usually performed in a slovenly manner, which is bad economy. The writer prefers shearing on a clean floor; providing each shearer with a bag filled with straw as a cushion, and seating him on the floor, the sheep is taken into his lap with his head under the shearer's left arm, the shearer then opens the jacket along the middle of the belly, up to the cheekbone, carrying his clip all the way every time. This is done until he reaches the backbone, when the animal is turned over, and the operation reversed until he again reaches the backbone, and the job is done. I never tie sheep while shearing, finding they struggle much less and are more easily handled not tied, after the operation is commenced.

The fleece taken off should be removed to a table and spread out (clean side down) to its natural size. The side should then be folded over to the middle; the shearer then mounts the table on his knees, and begins rolling up the fleece as tightly as possible, until he rolls up two-thirds. The remainder of the fleece should then be twisted into a rope by an assistant, wrapped tightly around it, and tucked under. Fleeces thus put up, may be very conveniently handled, and sent a long distance without coming untied. After shearing, a mark may be put on the sheep with a paint brush, which will last a long time. After shearing, the wethers and bucks should be put on the best pasture the farm will afford, while a more inferior one will answer for the ewes and lambs. They require no further attention if in good health until the first of September, save salting once a week.

On the first of September, wean the lambs by placing them in a field where the buck will not have access to them. These lambs are not to be put to the buck until their second fall, when they will be about seventeen months old.

The flock of breeding ewes should be picked over every fall, and the oldest and most inferior ones sent to market. As a general rule, a ewe should not be retained as a breeder (unless a very fine one,) longer than five years.

As a protection against dogs, I have for six years found bells to answer admirably. At least one-third of the flock and all the wethers should have bells on. Sheep managed well, I consider the most profitable of all farm stock, and will contribute more to the improvement of land, when not allowed to eat off the young clover. With regard to the diseases of sheep, it is far better to rely on the means of prevention, (viz: good food and shelter,) than of cure; but for further information on this subject, I will recommend Morrell's American Shepherd as containing "all things necessary" to sheep husbandry.

My article is decidedly long, and I would fain curtail it, but that I do not see where to do so. It is likewise, "flat, stale and unprofitable" to those who are already informed on the subject; but all are not so, perhaps, who read the Planter.

C.

For the Southern Planter.

THE LAW OF ENCLOSURES.

Of all the evils which depress the agricultural interest of our State, none are more severely felt than those which have been entailed upon it by the unwise legislation of our forefathers; and, yet, if any thing like a general interest could be imparted to the farmers of Virginia, none could be more easily removed. Controlling by its vast majority over all other combined interests in the State, the entire field of legislation, it has *protected every other interest but its own*, and whenever, through its representatives, a statute is originated, having in view the protection of "the nursing mother of the arts," those watchful guardians of our interest have not even the sagacity to give their act of legislation a proper title. Thus, the law regulating enclosures any sane man would have entitled, "an *act to authorize trespasses of cattle on neighboring proprietors, and to prevent all indemnification therefor;*" and this particular act confirms the justice of the foregoing remarks. Though no intelligent farmer in Eastern Virginia, *not a candidate for public favor*, denies that the increasing scarcity of fencing material and cost of labor demands some modification of this law, yet such is the apathy of the sufferers, that no efficient steps have heretofore been taken to abate this evil. By it, *all Virginia* is declared a common, except such portion of its arable surface as has a *line* of *fortifications* around it. The sacred right of property has been brought by it into dispute and contempt. The widow, the orphan and the poor farmer, all especial favorites of the law, have been impoverished by its operation. Who can fail to account for the amalgamation of so many of the small freeholds, and the consequent loss to the State of its best citizens? Does not every neighborhood contain some large estate in the hands of a wealthy proprietor, composed of these small freeholds which have been worked without profit and sold at a sacrifice, because the labor of fencing was too great a tax upon their poor proprietors? And after the contribution of at least one-twelfth of the labor of the farm, and the conversion of its best timber into rails, what is the farmer's guarantee against loss? The law directs a fence to be made of a specified height throughout, and in case of his sustaining a trespass from neighboring stock, throws upon *him* the whole burthen of proof. Admitting that a *fence can* be constructed from our ordinary materials, every panel of which is sufficiently strong to defy

the most persevering assaults of stock, whose energies are quickened by famine, and capable of withstanding high winds and storms, yet trespassing stock *will* find their way into his fields, and then what is his recourse? He obtains from a magistrate an order for the survey of his fence, and while this is being made at *one end*, the owner of the trespassing stock can secretly make gaps in the other, if he is evil disposed, and wishes to avoid the payment of damages. And how is it possible to determine the exact amount of damage which has been sustained by a wheat or corn crop, the dense cover of which may have harbored hogs for days before they have been discovered? All the provisions of the law are inoperative, and not one case of trespass in a hundred is tried before a justice of the peace. Unless considerations of mutual courtesy and friendship induce farmers to restrain their stock, they are maimed or killed as the only means of protection, thus engendering those deadly animosities which destroy the harmony of whole neighborhoods. I find it impossible to conceive any better right which a neighbor, who keeps more stock than he can feed, has to turn them out to forage *upon me*, than to pursue the same course with his slaves, and allow them to gain a sustenance by appropriating the surplus of his neighbors. And if the Legislature wishes to abolish the right of property, and lend their countenance to the existence of a system of communism, such as was never conceived of even by the most thorough-going disciple of Proudhon, let it engraft upon this act concerning enclosures, a further provision, compelling all farmers to keep a certain number of *locks* upon their corn houses and barns, and preventing him from recovering damages, if he has left any means of access to rogues. After this long summary of the evils resulting from the existence of this law on our statute book, the question will be asked "*cui bono?*" Some great counterbalancing advantage to so much evil to one class, must of necessity result to another. One would imagine that the State so far from having to depend upon the West for a large portion of their supplies of pork and beef, exported largely, and yet in no country on earth, can there be found, such a number of lean, worthless, "*praise* God *barebones*" stock, as in Virginia. Were they assessed for taxation under the ad valorem system the commissioner could not act upon them *individually*, so small is their value; but having to depend upon their own resources for a support from their *earliest infancy*, they will yield to no stock in the world, in point of *general information, cunning and perseverance.*

As the tide water section suffers more than any other portion of Virginia, I suggest that an effort be made to obtain such a modification of the present law, as will accomplish the objects sought for, to be applied to that portion of the State first. I am convinced, that once adopted in any one county or neighborhood, the favorable result of such a modification, as would restrain hogs and cattle, upon the agricultural interest, would insure the repeal of this law in all Eastern Virginia. The importance of this subject will excuse the length of this communication. You can give no more effectual aid to the cause you advocate, Mr. Editor, than by encouraging the agitation of this reform, and I hope you will give your subscribers, your own views on the subject.

J. B. M'C.

Nelson county, May 17, 1852.

From the Cultivator.

HAY AND FODDER—CUTTING AND CURING.

It may be safely averred that there is not a single operation on a farm that cannot be, and that ought not to be conducted upon scientific principles. Hence the utility, the necessity of a scientific education of farmers. If the remark be true of farm operations generally, it is more especially so of the subject of hay-making. In this we require a knowledge of vegetable physiology, of chemistry, of *pharmacy.* Vegetable physiology will teach us the nature and functions of the various organs and parts and juices of the plants with which we have to do; chemistry will teach us the theory, and pharmacy the art of curing and saving the article in the best manner. There is no doubt that a very large portion of the nutritive matter of hay, and all kinds of fodder, is lost by a want of knowledge of this kind. The writer of this has never seen a hay-field at *haying time*, that he was not forcibly impressed with this truth. To illustrate this subject—suppose a pharmaceutist, the Shakers, for example, were to gather their medical herbs, and cure them, and house them in the same way that hay and fodder are usually gathered, cured and saved—what, let us ask, would they be worth? Gathered at very improper seasons, cured in such manner as to ferment and evaporate all their intrinsic virtues, and at last housed in a place, and in a condition, to make assurance of its destruction "doubly sure," it may well be conceived they would not be worth much. There are certain rules to be observed in this, as in all things, to attain the highest degree of perfection. Every kind of hay and fodder will be good or good for nothing, according to the degree of attention to these rules. The grass should be allowed to attain the highest degree of per-

fection before it is cut, and that degree is found to be at the time of *flowering* or blooming, just before the seed begins to form. It being a *herbaceous* plant, the whole natural object of it is to make seed, and all its juices are, at the time of flowering, in their richest state. This is the time to cut it. If cut before this time, the juices are imperfect, and the fibrous matter immature; and if delayed beyond this time, more or less of the richness of these juices is expended in making seed. If the seed is allowed to become *ripe*, the hay is comparatively worthless. We never saw a load of hay in the market for sale, that did not exhibit unequivocal signs of having had a very large portion of its rich qualities exhausted, either before it was cut, or in curing. When it is understood, that if allowed to ripen seed perfectly, the grass loses all its rich juices, and becomes mere dry straw, woody fibre, a little silicate of potash, and a very trifling quantity of vegetable extractive matter, the importance of cutting it at the right time will be apparent.

And here it is proper to mention another error of almost, if not quite equal importance. It is that of mixing different kinds of grass together. There are scarcely any two grasses that flower at the same time, exactly, and if two be mixed that flower at different times, one or the other will be greatly deteriorated by being cut too soon or too late. All grasses should, therefore, be kept in distinct meadows.

The curing process is, however, of much the most importance. No matter at what times the grass be cut, if it be not properly cured, the hay will be worthless, in proportion to this imperfection. Two tons of hay shall be taken from the same field, the one cured properly, the other carelessly—and the one shall be worth twenty dollars, while the other will be dear at any price, except for mere straw. Let us descend to particulars, for the subject is sufficiently important to authorize it. Nearly the whole nutritious properties of the hay are in a fluid, or semi fluid state, highly susceptible of fermentation; and if fermentation takes place, they will be immediately dissipated in vapor. The object to be attained is to cure the hay, by evaporating the *water* only, of these juices, leaving the saccharine and other principles in a solid state in the body of the grass. But if the juices of the grass be allowed to ferment, then all these principles are rapidly changed, and pass off with the water in vapor. The usual method of curing hay, especially in the Middle States, permits the green cut hay to lay in masses till it gets more or less heated, especially the under portion of it. This heat is produced by fermentation. We usually see the hay in the swath till the next day, and then it is merely turned over, and even that very *carefully*. The underside will then be found to be very warm. Now, all this is wrong. The hay should be shaken up lightly, and loosely, so that none of it will lay in compact masses, and that the air may pass freely through it. It should be gathered into winrows as late as possible in the evening, and these should be well opened and turned, and loosened, early in the morning, so as to avoid spontaneous fermentation. If the weather be fair, the hay cut yesterday will be fit for cocking this afternoon, but it is not ready for housing or stacking. A great error is often committed in cocking hay, in allowing it to remain in these small stacks too long.

When cocked, the hay is merely wilted, not cured, and if allowed to remain in cocks, will ferment there. They should be opened and spread about, and re-cocked several times before being permanently stacked or housed. Shaking hay about has a great effect in curing it, much more than is generally supposed. It exposes it to fresh air, which carries off the water, and the oftener it is shaken up, the sooner and better it will be cured. Many object to shaking up the hay while the dew is on it in the morning. This is an error. A goood shaking at this time will effectually dry it.

G. B. S.

For the Southern Planter.

DISEASE IN THE HEAD OF SHEEP.

Mr. Editor,—By comparison of views, we may arrive at useful results, and I trust your correspondent R in your March number, page 85, will not take offence at my expressing through your columns, my impression that he is mistaken, as to the disease of sheep In his communication, he says he never saw the sack he mentions, the use of the tenon saw always bursting it. He will never see it in my opinion—nor will he ever see one recovered by the remedies he mentions as used by the Europeans. The disease is what is called in this part of the country the stretches, and is caused by the constipation of the bowels, brought on by the want of green and succulent food. It mostly attacks sheep in the best

condition, because of fuller habit, and rarely (in comparison at least,) afflicts maiden ewes, wethers, bucks, or ewes nursing lambs, but is much more frequent with inlamb ewes. The remedy is to be applied upon the first appearance of the symptoms—bleed freely, and get an operation on the bowels as soon as possible; a copious discharge will relieve them, if not too far gone; a large dose of flax seed tea, including the seed, is a good medicine—a full pint, if not more. In a very violent case, I should be disposed to give a small dose of croton oil (though I have never done so,) as the most active medicine for the purpose. Salts, I am disposed to think, is more active with sheep, given in a dry than in a liquid state—but prevention is better than cure I am inclined to think R. never saw a case in spring summer or fall, when sheep could get grass; it occurs only in the winter months, when neither grass or succulent food of any kind could be gathered by them.

To keep their bowels in a wholesome state, I have sometimes succeeded in keeping them in that state by a little Epsom salts, mixed with their salt; but the best preventive is to feed them on turnips, (Ruta Baga,) cut up; as a substitute, potatoes raw, cut up; beets, parsnips any roots, or even cabbage leaves as small feed of either every day, or twice a day; if not fancied by them, sprinkle a little salt over them until palatable. The disease is not known in England, because they use the Ruta Baga there freely—the manure made by it amply remunerates the cultivation of the crop.

VALLEY OF VIRGINIA.

June 20, 1852.

For the Southern Planter.

SUPERIORITY OF THE FARMING PROFESSION.

Mr Editor,—It is much the habit of most persons to indulge a complaining temper, as it regards their own lot in life, and many are disposed to think that disappointments and untoward events befal them more certainly, and with more oppressive energy, than others who stand around them. This is an unjust complaint against Providence, arising out of the fact that we know more of our own troubles than we can do of any one else's, and as it is *we* who are hurt by them, we feel them much more keenly than when endured by another. Now, there is no class of our community, who indulge this complaining spirit to a greater extent than the planter and farmer of Virginia; and none, I am assured, have less reason for it. Look to the planter's employment in what aspect you may, whether as to the effect it has on his moral being or social enjoyment, or whether as a source of sustenance to a growing family, and a sure means for the future settlement of that family, and I contend that it stands unrivalled by any of the industrial pursuits of the country. Let us examine it in the various views presented, and I appeal to the honest experience and sober reflection of every candid man in the community for the truth of my position.

When God created Adam, he placed him, in his state of purity and innocence, in the Garden of Eden, and ordered for his employment the cultivation of the earth as one best suited and most congenial to his uncorrupted nature. So long as he remained innocent, his employment afforded him occupation and delight. When his fall came, the labor in which he before took delight, became a painful burden, sent by Providence as a bitter curse upon his transgression And though many of the pleasures of agriculture are blackened and marred by man's disobedience and moral ruin, yet many beauties still cluster around it; such as a pleasing sense of dependence on a good Providence for the genial rains, and a strong feeling of gratitude when they are sent. His social qualities are cultivated, because there is nothing to interrupt or retard their growth. He envies no one, and is envied of no one. His swelling bulks and replenished garners have taken nothing from his neighbor; but are the result of his own toil and God's kind Providence. Not so with other pursuits. The doctor quarrels with his neighbor doctor, because he imagines that the patients placed under his care should have fallen into *his* hands. The lawyers quarrel over their neighbors' troubles at the rate of fifteen shillings ahead; and the smooth, smiling, complaisant merchant has a bitter enmity rankling in his heart, because his neighbor merchant sells a few cents lower in the yard than he does. And so on through all the pursuits of life. It will be found that they are calculated to kindle and foster unkind feeling, and to disturb social harmony. From all these the planter is measurably exempt.

That it is the best, surest and cheapest means of supporting a family, is so generally conceded, that it has almost become an axiom. Take an instance: Let a man with a wife and three or four children, (by no means a rare attendant on matrimony in these parts) go on a small farm, worth three thousand dollars, work three hands, and the other usual appliances of cropping in this country. Say his means reach five thousand dollars, all told—the interest on which is three hundred dollars. If he be industrious and judicious, (and most of our young men born to small expectations are so,) he will raise enough not only to support his family, but to do it in a style of comfort and abundance, not surpassed by many of the small potentates of Europe. Place another individual, like circumstanced, in town; (for you must cut him off entirely from agriculture to make a fair comparison,) let him pay his rent, buy his fuel his marketing of every sort, and all the other little drippings resulting from such a situation, and at the end of five years

the interest of his five thousand dollars will be consumed, and the prineipal gone along with it. And during the time his living will have been infinitely less comfortable and abundant than his country friends. But this is too plain a proposition to be debated, and I pass to the next.

That it is the surest means for the future settlement of a family is of easy demonstration, if the sound lessons of experience have not faded from the memory of all observing men. Look around through the land, and see who are the most independently settled young men in the commonwealth, and I venture to say, that with an occasional exception, they will be found to be the sons of planters. All planters who are sober, industrious and judicious, more or less succeed in their pursuits. Do all doctors do so? here and there, one by the force of high qualifications, and surrounded by fortuitous circumstances, attain to comfortable independence, and some to wealth. But when you look at the poor and hungry crowd, which drag out a miserable existence, waiting for their turn to come, we must determine against this as a calling for life. Do the lawyers do so? here and there one towers above his humbler brethren, in the career of reputation and wealth, while many, very many of his associates in the profession carry to their graves, and carry only that, the green bag with which they first took their seats in the bar. Will this picture do? I think not.

Do all merchants succeed in their pursuits? After a long life of labor and toil of body, of anxiety and solicitude of mind, when his executors are called to make out his balance sheet, he is too often found to have passed into a bankrupt's grave. It has been ascertained, by a careful examination of the history of the mercantile operators in the city of New York, which city boasts of a community of merchants, who stand as high for mercantile shrewdness and acumen as any in the world, that a large portion die bankrupts, very many never improve their estates, and that not more than five in one hundred die or retire from business with enhanced fortunes. Does this present a picture comparable to that of the Virginia farmer, or one at all calculated to invite our acceptance? I have selected these as the leading pursuits of life, those to which all our young men are attracted, who have the means; with what good judgment, if the above statement is true, I leave the reader to determine. Why then should agriculture be neglected and despised. The doctors may have their patients, the lawyers may wrangle over their cases, and the merchants may pinch the profits on their yard sticks; but give me a soft, fertile, generous soil, with all the necessary appliances to make it productive, and a few tons of guano to quicken its failing energies, and I will far outstrip them all in the career of contentment, happiness and wealth.

SOUTH SIDE.

Mecklenburg, Virginia.

From the Albany Cultivator.

THE DIFFERENT HAY PRESSES.

Messrs. Editors,—In reply to the inquiries of your correspondent in regard to pressing hay, I will give you the experience of farmers in this neighborhood, (Durham, New Hampshire,) where the raising market hay is the chief agricultural business. Hay was pressed for the Portsmouth, New Hampshire, market, in this town twenty-five or thirty years ago, and the first press, and only one for several years, was on the farm of N. Woodman. That press was constructed on the model of an old cotton press, then used at Portsmouth for packing hay. It was an upright box, eight or ten feet high, with one large wooden screw coming down in the centre through a beam at the top; this was stationary. Next was used an upright box with two smaller screws, one at each end, and a beam across, which was brought down by the screws. This was portable, and was carried about among the farmers, and the only one in town for some years. Either of these presses, with four hands and a horse, usually put up twelve bales of hay per day, or about two tons. About 1830, a new patent press appeared. The box was horizontal, or upon the side on the ground. The power was applied with cast-iron wheel and pinion work. About three cog-wheels and pinions were used. It was precisely on the model of the small jack screw, used in loading cotton ships at the south. Next was used the same form of box, with the power of a large rope over pulleys, instead of the wheel works. In both these presses, four hands and a yoke of oxen put up, commonly, from twenty-five to thirty bales per day, or about four tons. Both were portable. Next appeared an upright box, in which the hay was pressed down from the top as in the first two above mentioned. The power was applied by chains winding on axles, turned with same power of wheel and pinion work. This was portable and did good service. Five men turned out thirty-five or forty bales a day, or five tons and more. Next came the presses now in use. One is called the Railroad Press, and patented; the other is called the Elbow Press, and is understood not to be a patent. Both have an upright box, and press the hay from the bottom upwards, and the bale is taken out above, on a staging, and weighed, and hoisted away with tackle and fall. The railroad press has for its power, two beams coming near together

under the box, and there attached with a hinge joint to a strong mass of wood, called a "follower," that moves up and down the box. The other ends reach out in opposite directions, and rest upon an iron rail on a strong timber, and are made so as to move easily over it, by a solid iron truck at the end. As they stand, they form something like the letter A, only more flat. Then by chains, and a windlass and wheel in the centre, the lower ends are drawn up till they are along the rail nearly perpendicular to the ground, and parallel to each other. So the power rapidly increases as it is most required. The elbow press is in the main constructed in the same way, except that the power is applied by two toggle joints, (the joints of iron, and the arms of wood,) standing, when the follower is down, not unlike two V's placed opposite. (<>) They are then drawn together by a chain passing round a truck in the arms just below the joints, and wound upon a windlass in the centre, which is turned by a stout yoke of oxen drawing out a rope wound on the circumference of a large wheel attached to the windlass. Five hands, with a yoke of oxen, where the hay is conveniently situated, will usually press from forty-five to sixty bales per day, or from seven to nine tons. Both these are portable. One yoke of large oxen is sufficient to work either, or to move them from place to place over an ordinary road.

The elbow press is called the best, and is here preferred to the other. Both are used extensively. Durham is chiefly an agricultural town. It has about fifteen hundred inhabitants. In 1830, about one hundred tons of pressed hay may have been sent to market. In 1840, as much as five hundred tons were sold; and at the present time, 1852, no less than two thousand tons of pressed hay are annually sent to market. Lee, Newbury, Greenland, Stratham, Rollinsford, and other neighboring towns, are largely interested in the same product.

To secure the bales, small withes of withewood, gray beach, or alder, are used, about an inch through at the but, and from six to ten feet long. Two, of sufficient length, are twisted, and the tops lapped and wound strongly together, making a band long enough to reach around the bale and tie. Five bands are put on a bale. The withes, trimmed ready for use, cost from thirty to forty cents per hundred. The price for pressing hay is one dollar and fifty cents per ton—everything requisite, use of press, oxen, withes, &c. included.

The cost of the elbow press is from one hundred dollars to two hundred dollars, according to the excellence of the material and the work. The railroad press may be a little more.

If any, among your numerous subscribers, know of a better way of pressing hay, or of securing the bales, (for this now takes all the time of one good hand, besides the cost of the withes,) we should be glad to have him give us the information through your columns, as any improvement in this matter would be hailed with pleasure and satisfaction by the farmers in this neighborhood.

C. F. W.

Durham, N. H. Feb. 1852.

CHEMISTRY APPLIED TO THE MECHANIC AND FARMER.

Chemistry possesses also great interest from its application to the arts of daily life. It is the object of industry in acting upon the outward world to produce two classes of changes in the materials which it employs. The first are mechanical changes, which influence only the forms of matter, as in the operations of cabinet making and cotton spinning; the second are chemical changes, wrought in the nature of the substances used, and altering their properties, as in glass making and tanning. In both these cases the changes which take place are governed by certain fixed principles or laws, to which the workman must conform if he would operate successfully. The principles of mechanics, taught by natural philosophy, are quite generally understood; indeed, as this science considers only the relations of masses of matter which readily strike the senses, it was very naturally investigated earlier, and has always been a more popular study than chemistry, which inquires only concerning the relations of invisible atoms. Yet the laws which control chemical action are as unchangeable as those which hold the planets in their places; every kind of matter is subject to them, and no vocation in which they are concerned can be pursued to the best advantage unless they are clearly understood. The farmer, the miner, the metallurgist, the paper maker, the bleacher, the dyer, the druggist, the soap manufacturer, the painter, and innumerable other craftsmen,

are constantly acting upon chemical substances—constantly dealing with chemical laws—and hence, it is clear, require to know what they are. The greatest economy of process and perfection of product can only be obtained where the *principles* of a manufacture are distinctly comprehended. In such case the skilful operator is enabled to work *with* the natural laws, and not *against*, or regardless of them. It is said that in civil affairs it is always best to keep the law on our side, but in dealing with nature this is vastly more important; because, when *natural laws* are violated there is no such thing as escaping the penalties.

A most instructive illustration of the effect of neglecting chemical principles, while those of mechanics are thoroughly understood and applied, is afforded in the present condition of the United States capitol at Washington. The architectural beauty and mechanical excellence of that edifice are well known; but the freestone (sandstone) of which it is constructed was selected without due attention to its chemical and physical properties, and is totally unfit for its purpose, being rapidly acted upon and crumbled to dust by the common atmospheric agents. This destructive process has been partially arrested by the free use of paint; but the Secretary of the Interior has informed Congress that this expedient is ineffectual, and that unless scientific men come to the rescue, and invent some new preparation, which, by being applied to the stone, shall completely protect it from the action of the air, the whole structure will be reduced to a mound of sand in *one-fifth* the time that it would last if built of common marble. It is thus seen that chemical principles are involved even in avocations most purely mechanical; so that the best reasons exist for making them objects of universal study.

Among the various occupations which require a knowledge of this science to be successfully carried on, that most noble, useful, and universal of all human pursuits, agriculture stands prominent. The farm is a great laboratory, and all these changes in matter which it is the farmer's chief business to produce, are of a chemical nature. He breaks up and pulverizes his soil with plough, harrow and hoe, for the same reason that the practical chemist powders his minerals with pestle and mortar; namely, to expose the materials more perfectly to the action of chemical agents. The field can only be looked upon as a chemical manufactory; the air, soil, and manures are the farmer's raw materials, and the various forms of vegetation are the products of manufacture. The farmer who raises a bushel of wheat, or a hundred weight of flax, does not fabricate them out of nothing; he performs no miraculous work of creation, but it is by taking a certain definite portion of his raw material and converting it into new substances, through the action of natural agents: just as those substances are again manufactured in the one case into bread, and in the other into cloth. When a crop is removed from the field, certain substances are taken away from the ground which differ with different kinds of plants; and if the farmer would know exactly what and how much his field loses by each harvest, and how in the cheapest manner that loss may be restored, chemistry alone is capable of giving him the desired information. To determine the nature and properties of his soil, its adaptation to various plants, and the best methods of improving it; to economize his natural sources of fertility; to test the purity and value of commercial manures, and of beds of marl and muck; to mingle composts and adapt them to special crops; to improve the quality of grains and fruits; to rear and feed stock, and conduct the dairy in the best manner, farmers require a knowledge of this science. Nor can they, as a class, much longer afford to be without it; for it has always been found that the application of scientific principles to any branch of industry puts power into the hands of the intelligent to drive ignorance from the field of competition; so that as discoveries multiply, and information is diffused, those farmers who decline to inquire into the principles which govern their vocation, or who prefer the study of politics to that of agriculture, will have occasion to groan more deeply than ever over the unprofitableness of their business.—*Youmans.*

THE DAIRY—MAKING BUTTER.

As the dairy season is now fairly upon us, a few thoughts upon butter making, with especial reference to the quantity which may be made per cow, and the mode of doing it, may be profitable, and we hope interesting. Those persons who have gone on for years, satisfied with a yield of from one hundred to one hundred and twenty-five pounds per cow, supposing that about

the maximum production, may not thank us for disturbing their repose, and will probably reply that the cases to which we shall refer, are extraordinary ones, or perchance doubt the correctness of the statements altogether. To such we have only to say, if you are satisfied with your present doing, others have no right to complain, beyond the general desire for an improved system of management, and wish to elevate the character of the New York dairies, to the highest point of improvement.

Twenty years ago, good managers were content with one hundred to one hundred and twenty-five pounds per cow, of butter The standard has been going higher and higher since, until now, the dairymen who makes less than one hundred and fifty lbs. is rather ashamed to name the quantity, and can seldom recollect exactly how much he did make. He usually has "a large family to use the milk and butter," and his "cows are, many of them heifers, and he did not expect much from them," or some similar excuse.

In this age of improvements, we insist that one hundred and fifty pounds should be the minimum, even of poor dairies, while no good dairymen should be satisfied short of one hundred and seventy-five to two hundred pounds. This proposition may startle some who are slow to believe, but as the doctrine, that what has been done can be done again, holds good in this, as in other matters, there can be no good reason why such results should not be attained.

This brings us to a statement of a few instances of successful management, which have come to our knowledge, instances which are worthy of being held up as examples, before the thousands who have never reached equal successful results.

The instances to which we refer, may not be the most remarkable which have been reached, but they are certainly respectable, and we will thank any of our readers who have done better, to communicate the facts for publication.

We chanced a few days ago, to call on three farmers in the same neighborhood, within sight of each other, all of whom have been quite successful in butter making. The first was our old friend Lewis Eames, of Lee, who, several years ago, used to make about one hundred and eighty lbs. per cow, from a dairy well selected and well managed. He has, however, since let out his dairy, and has not now so good a lot of cows as formerly, having purchased several to increase the number, to correspond with the increased size of his farm. He last year made (from we think near twenty cows) an average of over one hundred and seventy pounds per cow, to sell, besides the quantity consumed in the family. His dairy is now increased to twenty-eight cows.

Mr. George Hitchcock, near by, from ten cows, made to sell over 1,800 pounds of butter, on an average of a little more than one hundred and eighty lbs. per cow. Among his cows, were one two years old, and two three years old heifers. Mr. H. feeds a little meal to his cows in the spring, until the grass affords a full bite, and in the autumn as the feed fails, feeds cornstalks, from corn sown broadcast and cut, and fed green. This he considers a very profitable practice.

Mr. Roswell Spinning, also in the immediate vicinity, milked last season, fourteen cows, and made to *sell* an average of one hundred and ninety-seven pounds of butter per cow. He feeds during the spring from two to three quarts of meal, a mixture of corn ground with the cob and oats, per day, until good feed is afforded in the pastures, and, like his neighbors, takes good care of all his cows all the year.

Here then, are three examples of successful results in butter making, showing what may be done *with good cows, good feed, and good management*. Now who will undertake to say that this system is not more profitable than that usually practised. Those who have so successfully tried it have no doubt upon the subject, and they certainly are the best qualified to judge.

Let us look a moment at the value of the products of these cows. There is no exact date to show the amount used in the families, but taking the average of these three dairies and the amount made, it is not much, if any less than two hundred pounds per cow. The average sales were about fifteen and a half cents, but we will say two hundred pounds at fifteen cents, amounts to $30. Add value of same same for pork, which is variously estimated, but which is certainly with good management, worth three dollars per cow, and we have a total of thirty-three dollars, a result far above that usually reached by dairymen, and affording a very handsome profit on the business.

If it is asked how this is accomplished, the answer is given in few words. Have

none but good cows, keep them well winter and summer, and take good care of the milk and butter. The very system which produces such large quantities, also ensures a good quality of butter, and consequently a fair price and ready sale.

Such are a few facts, hastily prepared, which may be serviceable to the readers of the *Farmer*. That they may at least awaken a spirit of inquiry is our earnest wish.

[*New York Farmer.*

THE SOUTHERN PLANTER.

RICHMOND, JULY, 1852.

TERMS.

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TIMELY WARNING.

All subscribers who do not order a discontinuance before the commencement of the new year or volume, will be considered as desiring a continuance of their papers, and charged accordingly.

WHEAT-THRESHING AND CATTLE-SHELTERS.

FOUR THINGS WORTH KNOWING.

There are three things which always bother a farmer in threshing wheat: the suffering of himself and his hands from the dust; the worrying of his oxen from heat; and the wear and tear of his horses from the constant strain of working the machine. But these three things are easily remedied.

1st. The dust may be entirely exeluded from the nose and lungs by simply adjusting a moist sponge, made to fit like a muzzle, to the mouth and nostrils. It is not troublesome or difficult to make—only make a tolerably thick, close fitting muzzle out of a sponge, stuff small pieces of the sponge into the larger holes and stitch them in with a thread, fasten it on by tape strings above the head, (twine strings will cut,) and keep it moist by rinsing it as often as it becomes dry. The philosophy of it is simply this: the pores of the sponge are very crooked and irregular, and the dust in its permeations settles on the moist surface and becomes mud. One can breathe and speak through this new style of respirator perfectly well, and will sustain only the inconvenience of some little increased heat about the mouth, but nothing comparable to the trouble from the dust. Every hand whose business keeps him near the threshing box should have one, and be made to wear it, or—be *threshed* himself.

2d. The distress of the oxen from the heat may be entirely obviated by working them under covers, like horse covers, kept moist. A piece of coarse oznaburgs, such as come around bales of raw cotton, fitted with strings to tie to the bottom of the ox bow, with a rude girth and as rude a crupper, answers every purpose. Wet it thoroughly, put it on wet, and keep it so, as far as possible, by giving the ox a shower bath with a bucket of water, or taking it off and soaking it. It is astonishing what relief it gives. At first the oxen may be refractory and attempt to kick it off, but they soon come to understand it and relish it very much. Our friend, Mr. Newman, with whom we dispute the originality of this invention, uses it on his oxen in hauling his wheat, some five miles, to market, and finds his account in it. Let the skeptical try it on one

ox in a team and see how speedily he will take in his tongue. Any gentlemen who has ever had a wet jacket will easily comprehend that a bullock may experience the same coolness that he has done from evaporation at the surface.

3d. The wear and tear of horses in working the wheat machine may be greatly mitigated by changing the teams; that is, if there are four horses working the machine, and four hauling up wheat, let them swap work every four hours, or about that interval. By doing it the horses will keep up their order and do more work than by the common plan. And their buttocks will not, by distressing and disfiguring scars, indicate, as they too often do at the close of threshing, how greatly their powers have been overtaxed. The number of consecutive hours that the horse works is a matter of much more importance to his durability, and consequently, to his health and his master's interest, than is commonly supposed. There is one case recorded, of coal hauling in Scotland, where by the device of breaking up eighteen miles of travel into four stages of four and a half miles each the quantity hauled by each horse in a team of four went up from three tons two hundred weight to seven tons weekly, a difference of very nearly four tons per horse.

Many of our readers will remember the astonishing ride of Col. Fremont in California, of eight hundred miles in eight days including all stoppages and nearly two days' detention. This feat, of one hundred and twenty miles a day with the first relay, and one hundred and twenty-five miles a day with the second, was performed by means of frequent changes, each of the party having for his own use three horses, which were successively caught and put under the saddle at distances of about twenty miles.

So much for these three things, as to each of which we speak from actual experience.

Now for the cattle-shelter.

Most persons, as the straw is threshed, put it up in round stacks or in long ricks on level ground. This should by no means be done, but it should be stacked so as to form a good shelter for cattle, as it may be without difficulty, trouble or expense. Select a site on a sloping hillside, if convenient, if not, build a wall, (of stone is best,) from *east to west* about two feet high: then draw a parallel line about eight feet from it. At proper distances in this line, say ten feet, insert strong posts showing four or five feet above the ground and about two feet in, well rammed: mortise strong plates upon these posts, (the mortising may be done with a two inch auger.) Across this parallel place stout poles, twelve to fourteen feet long, leaving just the intervals that you would in a rack; in fact, you have only made an enormous rack with an upward inclination of two feet in eight. Upon this elevated grating your straw should be stacked, and it will afford your cattle a fine shelter which they can gradually consume without troubling any one to feed them and the straw will at the same time be kept out of the mire. For the back wall a strong double fence to be stuffed with straw may be substituted, but it should be very strong or it will break down with the weight of straw. Of course, where a farmer has been sensible enough to have good shelters for his cattle these remarks do not apply.

OUR PROSPECTS.

A year ago we took charge of the Planter. Since then there has been added to our list about 1,400 subscribers, when we should have had in the same time 14,000. About five-sevenths of these we ourselves have obtained in such spare time as we have had and by some pretty hard electioneering, or, in plain words, begging. There is hardly a paper at the North of the same rank which does not boast its 30,000 or 40,000 subscribers, and it is somewhat mortifying to see Virginians so backward in this business, to see them require coaxing where Yankees volunteer. But we hope this will be corrected after awhile.

It is very desirable to enlarge the Planter, and we have several times been asked why we have not done it. It is evident that with so small a list of subscribers it is out of our power. Some persons have proposed to us to double the size and the price of the paper; we are willing; but we suspect we should lose more than half our list were we to attempt it, and as for new subscribers, they could not be had. It is worth a dollar now in many instances to get that amount subscribed, and

when the price is raised the difficulty would be increased in geometrical proportion.

That difficulty will be considerable at all events for some time to come; for are we not just in the beginning of a Presidential election? And every farmer will read his Whig paper or his Democratic paper—how few alas! read both—and will read it with as lively an interest as if he was the director and not the puppet of the politicians. Happy man, he thinks he rules them, at least helps to do it. The Planter is now to be handed to the lady of the house, whilst the husband hastens to see if "those rascals" have succeeded in proving Scott a "Sewardite" or Pearce a drunkard.

We fear that it will be vain to ask Farmer A to subscribe to the Planter. He has just taken "The Campaign," a cheap paper to last during the canvass. You need say nothing now to B about your remedy for the joint worm, for he is on "the committee of vigilance," has no time to attend to such things, and the joint worm wont come again until after the election. Nor ask C about his tobacco; he has not seen it for a week, having been to hear "a great stump speaker" "give it to" or "catch it from" another stump speaker, and had for several days before been overhauling the files of "The Crisis" or "The Yeoman," to get "an important fact" for the said stump speaker, to wit, how many more editors of newspapers President So and So had appointed to office than President Thus and So: Nor tell D the hogs are in his cornfield, for he will only refer you to the overseer, he himself being just about to start to "the mass meeting:" Nor talk to E of subscribing two dollars to the State Agricultural Society, for he has just come from the great State Convention, has paid his own expenses and subscribed five dollars to the Central Executive Committee fund for "circulating documents and for *other* expenses of the election," and worse than all has found out that his wheat has been heated to the tune of ten cents in the bushel by "the carelessness of my manager:" Nor propose to F to join a county agricultural society, for he is a member of the Democratic Association and has to watch "a clique that are trying to control it:" Nor to G to aid in forming a Hole and Corner affair, for he is a member of the Scott Club, and has to help to sing the "glees!"

Such important business as this, that is to say the business of working in traces, with the privilege of swelling the while, is destined to occupy the time of so many this summer and fall, that we hardly expect to do more than keep the hold we have, trusting to mend it when "the excitement" is cooled down. And is it not right and reasonable it should be so? For did not the Virginia delegation bring forward Franklin Pearce, with rarest concord, each man of said delegation, except two, originating the nomination? And are not Virginia Whigs bound to defeat this man with "the gallant Son of 'the Old Dominion?'"

Poor Old Virginia! Mother of States and of statesmen, and mother too of some children of quite other calibre, how long will these children neglect their own interests and your glory? When will they cease to bow their necks to the yoke of aspiration?

TOBACCO—ANSWER TO CORRESPONDENTS.

"A Subscriber" from Gordonsville desires to know "if it would do to take a crop of oats from land which brought tobacco the preceding year, and as soon as the oats are gotten off plough up the stubble, put in a crop of buckwheat and turn it under, so soon as it attained its green growth, to serve as a manuring for a crop of tobacco the succeeding spring; or if it would be better to turn the oats under and let the buckwheat alone."

As to the buckwheat we cannot say much, having no experience with the crop; but we should not recommend its use this way, or in any other as a green manuring crop where clover will grow, as, we presume, it will all about Gordonsville and Orange C. H. As far as we could venture to advise when we are entirely ignorant of the quality of the land and the rotation pursued, we would say that the better plan in our judgment, would be to save the oat crop, then "stubble up" the lot for rye or wheat to be followed with clover, and *take a fresh piece of land for tobacco*, to be manured with the ordinary manures of the farmer, or with guano ploughed in in the fall. If any buckwheat is to be used as manure for tobacco, let it be on another piece of land. This latter crop does not bear repetition well,

except on very rich lands; and if it did, it would be bad farming to repeat it. The improvement of the land is one of the most valuable features of the tobacco crop when well managed, and the first object after getting the crop off, should be to get the land that produced it well taken in clover. In this instance, it would have been better farming to have seeded clover with the present crop of oats. The most highly improved estates in Albemarle have been managed in that way.

DEATH OF HENRY CLAY.

The "Farmer of Ashland" is no more. He died in Washington City on Tuesday, June 29th, at half past eleven o'clock. For months past the public mind has been prepared for the painful intelligence, but its realization was necessary to show with what intense feeling of sorrow the nation would receive it. The mournful "minute gun"—the solemn toll of the church bell—the almost entire suspension of business—the weeds of mourning in every mansion—the gloom depicted in every countenance—the sorrowful throb of every heart, speak in unmistakeable language that "a mighty man has fallen in Israel!" For half a century he served his country with a patriot's heart and a giant's mind—and he has gone down to the "City of the Dead" with the grateful tribute of a nation's tears. Others have filled a higher official position, but none have left a more honorable renown or a more stainless name. It is no part of our duty here to record his services—the nation acknowledges them. His history belongs to his country—his fame to posterity. They will judge him by his merits. Peace to his ashes!

REPUBLICATION OF DeBOW'S REVIEW.

In our advertising columns will be found a prospectus of the republication of the back numbers of the above review in a condensed form. As the sole repository of southern and western statistics we consider it a work of value. The greatest want we encounter is the want of just such information as is here offered. To the large class of farmers in Virginia who look beyond the naked details of their business, and would compare it with other pursuits, we should think this work, the only one of its kind, must be necessary.

SCIENTIFIC AGRICULTURE.

We call attention to the first number of Major Gilham's Essay on Scientific Agriculture, which will be found on another page.

We know too little of such matters to speak with confidence of Major Gilham's ability to treat this very important subject in a satisfactory manner; yet, we have confidence in him, because he is Professor of Chemistry in a State Institution of high rank, and because we believe him to be a thorough gentleman. We again entreat our friends who wish their soils analyzed to send them to him, in preference to sending them out of the State.

From the Albany Cultivator.

INACCURACY IN FARMING.

We are unwilling to believe the frequent remark that farmers are less intelligent than other classes of the community, or that their business is less perfect than that of many other professions. A great deal of uncertainty and conflicting views exist, it is true, with regard to many points in their practice. But we must not forget that even what are termed, by way of eminence, the learned professions, furnish plenty of examples of similar differences of opinion. The 'glorious uncertainty of the law' is proverbial, in spite of the thousands of wise heads which have exerted their shrewdness for centuries to establish uniform justice; for even at the present day the most profound jurist is in some cases at a loss to say whether he may not be actually committing a crime against the law; and the greatest giant in legal achievement is he who can creep through the smallest keyhole of technical evasion. If we look at medicine, we shall hardly regard all difficulties settled when there are almost as many systems for keeping the corporeal machine in repair, as there are in Parisian fashions—while cold water, hot water, steam and red pepper, alternately exert their powers on the same disease; and cakes of ice and cantharides, mineral poisons and vegetable poisons, mercury

are denounced. Nor shall we, in taking large masses of people together, find more general intelligence among carpenters, tailors, blacksmiths, bricklayers and butchers, than in the agricultural community. All of them furnish occasional examples of brilliant mental achievement, and many of singular stupidity.

But there is one particular in which the farmers are decidedly in the back ground. It is one in which they have no adequate idea of the immense loss they are sustaining. A thorough reformation in this particular, the country over, would effect as great a change as steam engines have in travelling, or in manufactures. The deficiency we here refer to, is the want of rigid accuracy, by weighing and measuring, in conducting the various operations on a farm, and recording the results systematically.

The correction of this evil would immediately do more to improve and render profitable this great art of arts, than all that chemistry, botany, geology, subsoiling and tile draining could ever accomplish without it. It would be perfectly astonishing what an amount of fog and cobwebs would be cleared away from agriculture in a few years if it could be thoroughly and universally applied in practice. We have heard of a certain Yankee ship-captain who kept his "reckoning" upon a shingle; which answered a very good purpose in connexion with some shrewd guessing, until a fellow-countryman on board, in an idle hour thoughtlessly whittled it all away. Yet he possessed a decided advantage over many farmers, who keep no reckoning whatever. They find out perhaps at the end of the third year at furthest, by the amount of their debts, which way their vessel is drifting, or whether they are making any progress; but what it is that gives the impetus,—whether favorable gales, turned to the best advantage,—or heating against the wind to great disadvantage,—or even rowing with main strength with no wind at all,—they have an exceedingly indefinite knowledge at best.

To come a little more to particulars. There is not one farmer in a hundred but will apply his most skilful mathematics in reaching the precise value of what passes out of his hands—the produce dealer cannot defraud him of a single half-dime. The most accurate balance, and the most correct measure, give the true account of all he sells. But in all the transactions with his own farm—transactions in which it is of the highest moment that he should know whether he is gainer or loser—everything is enveloped in the darkness of uncertainty. He may not know after years of trial whether his profits or losses preponderate in the making of pork,—in the fattening of beef,—in the manufacture of cheese,—in the cultivation of grain,—in deep or shallow ploughing,—in coarse or fine wool sheep,—in rounded Berkshires, or clipper-built hand-pikes,—or in anything else which may be done or managed in two ways. A good farmer informed us that he had found a decided benefit in a dressing of leached ashes to his field; but the measured amount of benefit or the number of bushels applied per acre, were hid in the mists of conjecture; consequently he was unable to say whether it would pay to draw ashes for manure two miles or ten. Another had used shell marl under the same circumstances and with a like unknown result. A third had found an increase in his crops from the use of swamp muck, but whether this increase would pay the expense, double or quadruple it, remained locked up with the secrets of the unknown.

What should we think of a railroad company that should conduct all their internal arrangements by guesses; which should spend days at the end of each half year in discussing, arguing and trying to estimate the profits of the road, with a view to declaring a dividend? The balance sheet of a bank or other corporation must not contain an error of a single cent; why should not the farmer know all his accounts with his fields with a faint degree of the same accuracy? The cotton manufacturer can tell to a fraction the cost of his fabric; but how few even among our best agriculturists know how much a certain animal, or a bushel of grain, has cost them; and what seems still more surprising, is, that after numerous premiums have been offered by agricultural societies, we are still very much in the dark about the comparative value of roots and grain, of ground and unground food, of the best way of raising potatoes, and of a multitude of other points of great importance, and of which weighing and measuring would furnish at least a proximate knowledge.

If a single farmer would expend fifty dollars a year in the time and labor required to measure his fields or portions of them; to reckon accurately the amount of manure applied to each portion; to record faithfully the quantity of labor expended;

and the number of bushels yielded; if he would try some of the best modes for the feeding and management of cattle, horses, sheep and swine, in connexion with different breeds or fragments of such breeds, he could scarcely fail to possess in ten years an amount of knowledge not at present enjoyed by one in ten thousand. What then would be the condition of the art, if every intelligent cultivator should adopt a similar course—what an accumulation of valuable knowledge would be thrown together; what a sun-light would be sent into every dark corner of doubt, and the dim objects of twilight become clear and obvious in full glare of day.

Nearly the whole expense for beginning this proposed improvement is a weighing machine like a hay scale, in which cattle, loads of hay, &c. may be quickly examined; to which may be added a common grocer's or miller's balance for smaller objects; baskets of accurate measurement, half-bushel measures, a tapeline for measuring land, and cart-bodies and wagon-boxes with accurately estimated contents. Weighing animals once a week during the various experiments in fattening could be quickly accomplished with such convenient scales; and the small platform balance would enable one in a moment to determine the weight of a cow's milk or butter, a fleece of wool, or a bushel of grain. It is the want of facilities of this kind deters many from accuracy.

If any of our readers wish definite directions how to keep clear and distinct accounts, they will find the outline of an admirable specimen on pages 509, 510 and 511, of the last volume of Colman's European Agriculture, which we earnestly commend to their attention.

From the Plough, Loom and Anvil.

ON THE REARING OF CATTLE.

BY C. W. WOOD, OF WOODHOUSE, ENGLAND.

How few farmers are there who understand the rationale, the why and wherefore of most of their agricultural operations; and what chance is there for improvement when they are content to follow blindly in the beaten track of their predecessors, without inquiring if there be not a better path? What chagrin and disappointment might have been avoided, and how much time saved, by many importers and purchasers of improved cattle, had they read and acted upon the following advice, which we consider one of the best, because one of the most practical and comprehensive contributions ever made to the agricultural press.

The heading of this article formed the subject of a paper read by Mr. Wood at the June Quarterly Meeting of the Loughborough Agricultural Association. Mr. Wood confined himself strictly to the subject, not of breeding or of fattening, but of rearing stock; treating it under the following heads: 1. The Constitution and Economy of Agricultural Cattle. 2. The State and Condition in which they Exist. 3. Their Food and General Management.

In the consideration of the substances which compose the animal frame and their qualities, a key may be found to many secrets in the general management of young cattle, particularly as regards their habits and their food. Science points out to us a frame-work of bones, (the principal ingredients of fibrin and gluten,) to give form, uprightness, stability and strength to the machine; next, an attachment of muscle, (composed chiefly of fibrin and gluten) to give motion and activity to the body: and lastly, a respiratory and circulating apparatus, to supply heat, nourishment, and life to the whole, in order to resist the chemical powers from without. Seeing, therefore, that we have a mixed machine to deal with, it is self-evident that mixed or combined means are needed to carry out the first intentions of nature, and without which life could not exist. We must have, first, starch or sugar, to supply carbon for respiration; second, fat or oil, to keep up the fat which exists, more or less, in the bodies of all animals; third, gluten or fibrin, to supply muscle and cartilage; fourth, earthy phosphates, for the supply of bones; and fifth, saline substances, sulphates and chlorides, to replace what is daily rejected in the excretions.

The second proposition requires to be clearly defined, viz; the state or condition of animals. We find this to be three-fold, each of which requires our anxious attention. We have, first, a fœtal state, or one in connexion with the mother, which exists before birth; secondly, a state of growth or development, which comprehends the period from birth to maturity; and thirdly, the state of the full grown animal.

We have no control over the condition of the fœtal animal, except through the medium of the mother, of the general management of which I shall speak pre-

sently. Of the second condition, Nature must be closely observed and carefully imitated, in order that the third or ultimate condition may be healthy, full grown and useful—the great object of the farmer, to repay him for all his expense, anxiety and toil.

It is a very false economy to stint the allowance of food to a young animal. New milk, or the flour of all leguminous plants, such as beans, peas, &c. which contain casein, with an infusion of oil-cake,* to promote fat, seems nearly to approximate to the composition of ordinary milk—skimmed milk being destitute of the principal ingredient required by nature for the support of respiration. This, in addition to warmth and cleanliness, will always keep the vital powers predominant over chemical—the cardinal point in the rearing of cattle.

I now come to my third position, viz:—"their food and general management;" and a more important and profitable subject cannot engage your attention. It must be considered in detail. I will begin, therefore, as I proposed, with the fœtal condition of the animal, and take a calf as a general example. It, like all other animals, is supported and nourished by the blood circulating from the mother through its own body, from the moment of its earliest formation up to the time of its birth; which blood contains, ready formed, all the various substances which are necessary for its own sustenance and existence. The cow forms a new and complete animal; it also secretes food for this new animal, which is to sustain and increase it for a considerable time after its birth; for the milk, like the blood, is the most perfect food and contains every substance of which the body is built. When sucking is at an end, should we not imitate nature, a sure and unerring guide to philosophic truth? Any animal—whether cow, horse, sheep, or pig—having its own existence to support, (I will add in agricultural language, "in good condition") a new animal to form, and one also to feed, is, to say the least of it, in a most important and interesting condition. Is such an animal to be sent to feed upon a scanty pasture, to be turned into a miserable and wet farm-yard, or kept upon straw and an occasional turnip, until she is little better than a bag of bones; and then, forsooth, to expect a fine healthy offspring, with an abundance of milk for its sustenance? And if such brilliant expectations are not realized, the fault is to be laid upon the poor beast—"She is not a good milker;" or to the land—"It will not do for rearing, or for dairy purposes;" in short, upon any thing rather than upon their own stupid, ignorant and thoughtless minds. Breeding stock, gentlemen, cannot be kept too well; they are, in truth, feeding stock to others, and ought to have the best a farm affords; the best pastures in the summer, with cabbage and common turnips in the autumn; Swedes, sweet straw, oil-cake, [corn meal,] and hay in the winter; and in the spring after calving, some mangel-wurzel, steamed potatoes and hay until the grass time again.

To nourish the young animal in the womb of its mother, an additional quantity of food must be given, and this quantity must be increased as the state of pregnancy advances; and the kind of additional food must readily supply the materials of the growing bones and muscles of the fœtus, and contain a larger quantity of starch or sugar also, than the mother in her ordinary state would require. This is required by the circumstance that the mother must now breathe for herself and her young; the quantity of blood is increased, more oxygen is taken in the lungs, and consequently more carbonic acid is given off. A certain proportion of bone and muscle must also be supplied to the young animal by the food given to the mother, or the bones and muscles of the mother herself will be laid under contribution to supply it. This must be effected by the quantity of phosphates, gluten, fibrin, or casein, which are given in the food with which the mother is fed.

An animal thus kept will be in the most profitable condition to rear its young; and bear in mind, that as the calf grows rapidly, the food it requires increases daily with its bulk, and the demands upon the mother every day become greater. At this period, therefore, the cow must obtain larger supplies of food to sustain herself and to produce a sufficient quantity of milk for her calf. If, then, adequate supplies are not given, a portion is daily taken from her own substance which causes her to be lean and feeble, and her young stinted and puny in its growth.

What has been said regarding the food given to the cow, will be more or less effective in promoting the growth of the young animal solely on milk; when richer

* Indian corn, the glory of American agriculture, is more than an equivalent for this main-stay of the British feeder.—Ed.

in curd, it will promote more muscle; when richer in phosphates, more bone; and in butter, more fat. Milk is a perfect food for a growing animal; nothing is wanted in it. The mother selects all the ingredients of this perfect food from the substances which are mingled in her stomach from the food she eats; she changes them chemically in such a degree as to present them to the young animal in a state in which it can most easily, and with least labor, employ them for sustaining its body, and all this at a given and appointed moment of time. In due time, the young animal begins to feed for itself, and then the mother improves in condition. Warmth, exercise and good food are all that then is required; always bearing in mind that, as nature prepares the food for young animals in a state in which they can most easily digest it, so we should prepare by boiling or steaming all dry food and roots for the same purpose. In the growing animal, the food has a double function to perform—it must sustain and it must increase the body. Hence, whatever tends to decrease the sustaining quantity, (and cold, exercise and uneasiness do so,) will tend in an equal degree to lessen the value of a given weight of food in adding to the weight of an animal's body. To the pregnant and the milking cow, the same remarks apply.—The custom of allowing young cattle to remain during the whole winter in straw-yards, exposed to all the variations of weather, cannot be too loudly condemned.—Oil-cake, it is true, which is sometimes given in large quantities, makes some small amends by the supply of carbon to the system; but if a warm, dry and clean shed was substituted, with turnips instead of cake, the condition and quality of the animal would be very much improved, and a considerable saving of expense be effected, to say nothing of the improvement of the manure.

All vegetables contain, ready formed, (which they extract from the food on which they live,) the substances of which the parts of animals are composed. The animal consequently draws, ready formed, the materials of its own body from the vegetable food it eats. The starch, sugar and gum in vegetables are to supply carbon for respiration. Carnivorous animals obtain it from the fat of the food; starving animals from the fat of their own bodies; and young animals, which live upon milk, by the sugar it contains. In the young animal we find an excess of life; it has to increase as well as sustain itself. In the full grown animal we find the daily waste of substance, which is carried out of the body in the excretions, made up by the gluten, phosphates and saline substances in the food, and a balance kept up between the powers of life and the bodily structure; it simply has to sustain itself. In the old animal, when life is diminished, we observe a proportionate decrease of bodily substance.

It is interesting and wonderful when we thus trace the existence of the bodily structure of all animals ready formed in the vegetable, which property in vegetables is formed during their growth—is derived from sources purely gaseous and inorganic, by chemical, mechanical and physical operations. It is the duty of the practical farmer to adopt these methods for improving the soil; but this forms no part of my subject.

Sheep.—The additional value to your flock by this mode of management, and especially in giving them some dry food, such as hay or corn, before lambing, is very great. It gives firmness of fibre, and adds greater vigor to life, a greater activity to the vital powers, by which alone it is capable of resisting disease, and of arriving at an early maturity. The improvment of the fleece, by such a course, will be fifty per cent. The old breed were kept from two years to two years and a half old before sold, and rarely exceeded ten pounds, or fifteen pounds a quarter. It is true, breed has much to do with this question; but in sheep of the same breed, kept in different ways, a difference of twenty-five per cent. may be frequently observed. To insure a healthy offspring, a good fleece of wool, and of sound staple, sheep require to be kept well, in the spring months particularly.

Pigs.—Pigs ought never to lose the fat or condition they receive from the mother, which is easily kept up by milk, peas or beans, and all of which contain flesh. A small quantity of oil-cake, once or twice a day, in addition to turnips, mangel-wurzel, or any vegetable food; fed in this way, many months are saved in time, and you have the advantage of summer feeding, which, on account of the warmth, is by far the best period for this purpose.

Horses.—I need only say that where great muscular development is required, as in the case of race horses which run for the two-year old stakes, they are corned very high as soon as they can eat it; and

it is astonishing to see the strength and activity resulting from such a plan. Early maturity is very profitable here. Give your yearlings plenty of oats and beans, with steamed potatoes during the winter, and you gain a complete year in time, besides the increased value you put upon the animal; and in summer feed them upon rye or clover, the best possible food for horses. The sooner they are broken in the better; their tempers become quieter, and they thrive more. I wish to mention here the great value of salt to all young animals; it destroys bots and worms; it promotes digestion, and assists the secretion of healthy bile, the medium through which respiration is supported; this, however, should be given in moderate quantities.

Having now spoken upon the general management of the various kinds of cattle usually reared by the farmer, I shall conclude with a few remarks upon their food; and I deem you will not consider this out of place. The amount of food, either for man or beast, which a given acre will produce, depends considerably upon the kind of crops which is raised. Thus a crop of thirty bushels of wheat will yield only about foruteen hundred pounds of fine flour, while a crop of six tons of potatoes will give about four thousand four hundred pounds of an agreeable, dry and mealy food.

It is said, on the authority of the Board of Agriculture, that a crop of clover, tares, rape or potatoes, cabbage, or turnips, will furnish at least three times as much food for cattle as an equal breadth of pasture-grass of medium quality. This, however, being but a hint, I will at once give you a table of the nutritive qualities of the various sorts of food now in common use. It is selected with some care from the various tables published, and has direct reference to the subject before us, on account of the proportion of gluten, starch and oil which each article contains.

In the root crops I place—first, carrots; second, mangel-wurzel; third, Swedes; fourth, potatoes; fifth, cabbage; sixth, common turnips.

In the green crops—first, dills; second, rye; third, clover; and fourth, grass.

In the corn crops—first, beans; second, peas; third, lintels; fourth, wheat; fifth, barley and Indian corn; sixth, oats; seventh, rye; eighth, buckwheat.

In the straw crops—first, pea straw, which is nearly equal to hay; second, oat and barley straw; fourth, wheat and straw; fifth, rye straw; and sixth, bean straw.

Three pounds of oil-cake are equal to about ten pounds of hay.

THE PHYSICAL AND INTELLECTUAL PLEASURES OF FARMING.

We are unable to resist the temptation to transfer to our pages the following communication from Frederick Holbrook, one of the associate editors of the New England Farmer, to the columns of that paper, in answer to the queries of a correspondent.

Mr. Holbrook's connected style rarely allows of the selection of detached passages. So closely do what precedes and what follows depend one upon another, that a fragment gives as little idea of the whole, as a Philadelphia brick would give of a Chestnut street block. "Good wine needs no bush." So, without any palaver, we let our friend speak for himself.—*Ed. Journal of Agriculture.*

I come now to a direct practical answer to your question—"In what does the secret consist of finding any real substantial pleasure in the operations of farming?" Among other things you name "the monotonous business of holding the plough from early in the morning to late in the evening." As too commonly conducted, I grant the ploughing is not a particularly agreeable business, and that you have described it quite tersely. Too many ploughmen, having little or no thought about the true philosophical principles of their business, are more anxious to get over the greatest possible breadth of land in a day, than to do proper and the best work.—They cut their furrows too shallow, and as wide as, or wider than the plough can possibly turn them, and what portion cannot he got over with the plough aided by the foot of the ploughman, rolls back into its bed again, and the next time round its "grass side up" is put out of sight by the "cut and cover" operation, making a high ridge of earth with a deep hole beside it. The furrows are also very crookedly cut, and, therefore, do not match together at all well. The ploughman twists and turns himself in all manner of shapes, is vexed with his plough, scolds at and whips his team furiously, labors and tugs and sweats away, "from early in the morning to late in the evening," and can show you as big and as mean a day's work as you could wish to see, with hardly a rod square of passably good work in the whole piece. I would not allow such a workman to plough a day for me if he would do the work for nothing and pay ten dollars for

the privilege. But if properly conducted, say for ten hours in a day, which is all a merciful man will require of his animals of draught, however he may be disposed as to himself, ploughing is one of the finest and most exhilarating employments in the world.

Did you ever investigate the accurate philosophy of the plough and of ploughing? Take a highly improved modern plough, and study it. Look at it as a whole implement, and at its several parts, and reflect what a world of profound study it has cost to produce that same implement. What high mechanical principles it involves, and how beautifully do they combine together to produce an exact and most valuable result. There is the mouldboard alone, although an exact mathematical combination, yet it is a problem for you, (I speak advisedly,) which, if you have not solved it, its solution will give you a pretty sharp brush, with all your mathematics. Then, too, a combination of mathematics, a little varied to suit each case, will give you the best form of mouldboard for sandy and gravelly soils, for clay, and heavy moist soils generally, and for best working stubble land. The plough best adapted to sandy, and generally light, dry soils, will lay flat furrows, accurately shut in beside each other, thus preventing too great natural tendency to evaporation, incident to such soils. Your mathematics will show you that a coulter set levelling to the land, an inclined landside to the plough, and a concave-lined mouldboard, all contribute to facilitate the laying of flat furrows, and that it would be difficult to drop the edges down accurately beside each other without these several provisions. The plough best adapted to clay and other heavy or moist soils, cuts rectangular furrows and lays them at an inclination of forty five degrees to the horizon. Your mathematics will show you that this is the best position for the furrows of such soils to be placed in. It can be undeniably demonstrated that none but rectangular furrows, whose depth is to their width as two is to three, *can be laid at an inclination of forty-five degrees;* that rectangular furrows, whose depth is equal to two-thirds their width, and which are laid at an inclination of forty-five degrees, present, in their projecting angles, a greater surface of soil to the ameliorating influences of the atmosphere, and greater cubical contents of soil for the harrow to operate on in raising a deep fine tilth, or seed-bed, and permit underneath them a freer circulation of air, and passage from the surface of superfluous moisture, than furrows of any other form or proportions that are practicable to be turned. The plough in the very best manner adapted to the working of stubble lands, will be higher in the beam to enable it to pass obstructions, and shorter in the turn of its mouldboard than either of the preceding, will have a greater depth of iron in the back parts of the mouldboard, which will tend to throw its loose stubble furrow all over to an inverted position, and leave a perfectly clean channel behind it for the reception of the next furrow. Thus you see there is quite a philosophy in ploughs and ploughing, which the intellectual farmer is bound to understand.

However dull and monotonous the business of ploughing may be to you, it is not at all so to me. Starting my team a-field of a bright spring's morning, with my plough all bright and clean from its winter quarters, I feel as honest a pride and pleasure at the thought of my occupation as I ever do when engaging in any employment. I strike out my lands with a furrow as straight as an air line. After this is accomplished I gauge my plough to cut deep furrows, and as narrow as is possibly compatible with the depth, and then take them off the land of uniformly exact depth and width, never allowing a crooked furrow to be seen in my ploughing. To me it is very exhilarating to see the furrows roll off my polished mouldboard, and lay beside each other with as accurate a finish as though they had been joined by a carpenter's tools, and to think, as my eye surveys the smoking soil thus prepared, how mother earth always delights in bountifully rewarding the careful husbandman,—that she invites a liberal, intelligent and accurate cultivation, by returning as compensation a greatly increased crop. I say to myself that I am one of the number engaged in an operation without which man would not have bread, civilization could not advance or be sustained, and which was one of the fundamental operations early contributing to elevate man from the barbarous state, and fix him in the abodes of civilization. I remember that the plough has been regarded with a sort of sacredness by men in every age, that even far back—

"In ancient times, the sacred plough employed,
The kings, and awful fathers of mankind;"

and that now, it employs many of earth's choicest spirits. This occupation brings me fine health, refreshing slumbers, and while engaged in it, I can *think* as accurately as under any other conditions whatever. Indeed, if I were called upon to prepare a public address, an article for the press, or to engage in any other intellectual exercise, I could fix upon and arrange my subject, and bring to it quite as much vigor of thought and shape it into as logical an arrangement, as under any other circumstances.

My friend, you will find more or less philosophy connected with the proper performance of almost any of the methods of agriculture; and that many subjects, requiring further scientific inquiry, exist even in the commonest operations of husbandry. Your soils need to be fully understood that you may supply their wants and correct their superfluities. The various ingredients or properties of your manures must be known, together with the theory of composting, and must be applied properly. The properties that go to make up your crops must be found out, so that you may best adapt the crops to the soil, or if your soil is deficient in ingredients requisite to the raising of some desirable crop, they must be supplied by proper manures and cultivation. Fruits, for home use and for sale, must be produced, and a world of scientific investigation may be well employed, in finding out their best management, the character and habits of insects injurious to them, and the best means of preventing their depredations. The wet lands must be properly drained, which requires a combination of science with practice. Irrigation produces wonderful effects, may perhaps be within your reach, and its theory and best management must be found out. The philosophy of breeding domestic animals, a beautiful and interesting study, generally poorly understood and miserably practised in our country, must be investigated.

* * * * * *

I have been thus earnest in stating the case as I understand it, because our agriculture has been quite long enough cursed with a prevailing sentiment that the farmer does not need much knowledge, and could not use it practically and profitably if he had it. It is claimed by many that the principles of correct cultivation are few, and all found out; that farming is a mere monotonous routine, for physical labor to conduct; that he is the best farmer who can do the biggest day's work with his hands, who can skin his farm the cleanest and put the proceeds of his fertility at interest, spending little or nothing for the improvement of himself and family, and nothing to make home attractive.

Talk to many of our people of the advantages of applying the sciences to the cultivation of the ground, and about better educating the farmer, and they will tell you that it is simply ridiculous nonsense. I say that these things are a curse to agriculture every way; and particularly so because many of our brightest and most enterprising young men, sickening at the thought of engaging in a pursuit thus advocated and practised, and unwilling

> "To drudge through weary life without the aid
> Of intellectual implements and tools,"

go off to other pursuits, when, if they could have had one-half the thorough training to fit them for farming which they were obliged to go through to be prepared for some other pursuit, we should now see much more of correct, profitable cultivation than is seen.

I have to say to you, in conclusion, my young friend, that if you wish for a field of honorable usefulness, second to no other, for a naturally dignified pursuit where cultivated intellect may find full scope, where, by a practically judicious application of the natural sciences which illustrate agriculture, you may wield a large influence for good to others then stick to your farming. True, it will not bring you great wealth; that is with difficulty attained, by comparatively a few; it usually requires of him who seeks it the devotion of his every energy, while it is not his greatest good, but sometimes proves an evil either to himself or children. But an enlightened cultivation of the earth will give you a competence, and will prove favorable to mental culture and virtue. Your home, though modest and inexpensive, may be adorned in many little ways which will tend to make it the tasteful and fitting abode of virtue. A moderate outlay will, in these days of improvement, furnish you an assortment of the very best books, so that seated before your hearth you may commune with the choicest thoughts of gifted men. While abroad in the fields, nature will give you lessons of the deepest import. Your lands will furnish you a laboratory for the testing and practical application of science. These things are

within your reach—not like wealth, difficult, and hard to be won, and only by a few,—they are

"No special boon
For high and not for low, for proudly grace
And not for meek of heart. The smoke ascends
To heaven as lightly from the cottage hearth
As from the haughty palace. He whose soul
Ponders this true equality, *may walk*
The fields of earth with gratitude and hope."

F. HOLBROOK.

PAYMENTS TO THE SOUTHERN PLANTER,

From June 5th, to July 1st, 1852.

All persons who have made payments early enough to be entered, and whose names do not appear in the following receipt list, are requested to give immediate notice of the omission, in order that the correction may be made in the next issue:

W. F. Lewis, to July, 1854,	$3 00
Mrs. Charlotte Carver, to Jan. 1853,	1 00
Joseph Ricks, to May, 1853,	1 00
David H. Clark, to January, 1854,	1 00
William P. Newbill, to January, 1853,	1 00
Dr. N. K. Foster, to September, 1853,	1 00
James Allen, to June, 1853,	1 00
William P. Forbes, to May, 1853,	1 00
V. M. Eppes, to January, 1853,	1 00
James R. Wright, to January, 1853,	1 00
William Jeter, to July, 1852,	3 00
Robert A. Kent, to July, 1852,	1 00
Samuel Tunstall, to January, 1853,	1 00
James Brown, to July, 1851,	1 00
Dr Rob't Henderson, to January, 1853,	2 00
Gen'l C. Braxton, to July, 1852,	1 00
Dr. W. P. Braxton, to January. 1855,	4 00
Thomas Durrett, to January. 1853,	3 00
Joseph Allen, to January, 1853,	2 00
Hugh Rileigh, to July, 1852,	2 00
William Palmer, to July, 1852,	2 00
William C. Menniss, to January, 1853,	1 00
Dr B. M. Jones, to January, 1852,	1 00
William Hankins, to July, 1852,	1 50
William S. Dupree, to July, 1852,	0 50
James R. Dupree, to July, 1853,	
John D. Priddy, to July, 1853,	
William Hankins, to July, 1853	
Capt F. Lester, to July, 1853,	
William S. Dupree, to July. 1853,	
George L. Bayne, to July, 1853,	
Capt. G. A. Wood, to July, 1853,	10 00
C. O Lipscomb, to July, 1853,	
William H Eubank, to July, 1853,	
Joseph L Watkins, to July, 1853.	
Capt. R. H. Williams, to July, 1853,	
P. K Wood, to July. 1853.	
Langston Arvin, to July, 1853,	
Col Alexander Fleet, to January. 1853,	1 00
Col. M M Millner, to May, 1853,	1 00
Richard E. G. Adams, to May, 1853,	1 00
Jesse H. Heath, to June, 1853,	1 00
C. J. Meriwether to January. 1853,	1 00
T. J. Taylor, to January, 1853,	4 00
A. S. Jones, to January, 1853,	$1 00
John W. Old, to January, 1853,	2 00
A. K Yancey, to January, 1853,	1 00
Nathan Parker, to January, 1853,	2 00
James Fontaine, to January, 1853,	5 00
James Paxton, to January, 1853,	5 00
S. B Atwill, to July, 1853,	1 00
J W. Scott, to July, 1853,	1 00
John S. Cowherd, to January, 1853,	2 00
John H. M'Kinney, to January, 1853,	1 00
Archibald Gills, to July, 1853,	2 00
Thomas W. Bradley, to May, 1853,	1 00
J H. Etheridge, to January. 1853,	2 00
William Payne, Sr. to January. 1853,	1 00
Lemuel Turner, to January, 1853,	2 00
Thomas W Downer, to July, 1853,	1 00
Mose D. Echols, to January, 1853,	1 00
John G. Hughes, to September, 1853,	2 00
John Ruff, Sr. to June, 1853.	1 00
Peyton Grymes, to July. 1853,	1 00
Ro Morrison. to June. 1853,	1 00
Hugh W. Mackey, to June, 1853,	1 00
John Currie, Sr. to May, 1853,	1 00
James H. Bowyer, to June. 1853,	1 00
John A. Cross, to June, 1853,	1 00
Robert Allen, to June, 1853,	1 00
G A. Baker, to June, 1853,	1 00
Major J. C Hutton, to June, 1853,	1 00
Robert Sterrett, to June, 1853,	1 00
James A F. Randolph, to June, 1853,	1 00
Andrew Lindsay, to June, 1853,	1 00
J. L Campbell, to June, 1853,	1 00
William Ackerly. to May. 1853,	1 00
Reuben Grigsby, to May, 1853,	1 00
John M'Corkle, to June, 1853,	1 00
John G. Pole, to June, 1853,	1 00
M. H Effinger, to June, 1853,	1 00
John W. Hamilton, to June, 1853,	1 00
Matthew White, to June, 1853,	1 00
Ro. C. M'Clure, to June, 1853,	1 00
John F. Harper, to May, 1853,	1 00
John C. Laird. to June. 1853,	1 00
R. C. Noel, to June 1853,	1 00
John C Bell, to June, 1853,	1 00
W. F. Poague, to June, 1853,	1 00
Joseph Steele, to June, 1853,	1 00
Dr. William M. Gold, to June, 1853,	1 00
James Montgomery, to June, 1853,	1 00
John Hamilton, to June, 1853,	1 00
John G. Hamilton, to June, 1853.	1 00
Dr W. A. Wilkinson, to June, 1853,	1 00
William Clark, to June, 1853.	1 00
Dr. D. S. Morgan, to June 1853,	1 00
H. M. Bowyer, to June. 1853.	1 00
Ro. B. Moorman. to June. 1853,	1 00
Dr. John A. Davidson, to June. 1853,	1 00
Dr. F. E. Luckett, to June, 1853,	1 00
James T. Marshall, to June, 1853,	1 00
Samuel W. Martin, to July, 1852,	1 00
Jonathan Leathers, to September. 1852,	1 00
H. Z. Shackleford, to April. 1853,	1 00
John O. Harris, to January, 1853,	1 00
A F. Terrill, to January. 1853.	1 00
Edwin Thurman, to January. 1853,	3 00
James W. Twyman, to July. 1853,	2 00
Emanuel Gersi, to May, 1853,	1 00
Thomas Hardin, to January, 1853,	1 00

DEVON BULLS FOR SALE.

THE subscribers, having lately entered upon the business of Breeding Devon Cattle, now, for the first time, offer for sale some of their Bull Calves. Their stock is all recently imported from the celebrated herds of Messrs. George Turner and James Quartly, Devonshire, England, who are well known as the first breeders of Devons in the world; and being in no way related to the older importations into this country, their bulls will afford a good opportunity for crossing the old stocks

Those we now offer are *Uncas* and *Keokuk;* the first, calved March 19th, 1851—the other, February 17th, 1852; their pedigree is the same, viz: sire, "Megunticook," grandsire, "Prince Albert," dam, "Non-Pareille," by "Lord Lynedock." "Megunticook" won the first prize at the American Institute in 1850, and at the New York State Show in 1851.—"Non-Pareille" won the first prize at Barnstable, Devonshire, in 1846, and at the New York State Show in 1851. "Prince Albert" and "Lord Lynedock" were both favorite prize bulls of Mr Quartly. Also "*Red Jacket*, calved May 5th, 1852; sire, "Megunticook," dam, "Meadow Lilly," by "Baronet," grand dam, "Helena," bred by Mr. James Quartly.—"Baronet" has won four first prizes, including that at the Royal Agricultural Society's Show, at Norwich, England, in 1849.

Several animals from our herd will be exhibited at the New York State Show, to be held at Utica in September next, and at the American Institute in October. They may all be seen at any time on our place, two miles north of Rhinebeck Landing, on the Hudson river. (As yet we have not any heifers for sale)

W. P. & C. S. WAINWRIGHT.

Rhinebeck, Duchess county, N. Y.
je—3t

PILKINGTON'S OR LUCK'S IMPROVED PATENT SMUT MACHINE.

THIS Machine has proved itself to be one of unrivalled excellence. It is warranted to answer every purpose of the most complete and expensive machinery of screens, rubbing stones, fans, &c. and will thoroughly clean the most smutty wheat. It is the best contrivance to take out chess, onions, and heavy grit, that has ever been used by millers. This machine is provided with self-acting oil feeders to the journals, and requires to be oiled but once a week. It wholly does away with the small fan. It runs at the rate of one thousand revolutions per minute, requiring but little power. We have sold a large number of these machines and they have in every case given entire satisfaction. Price $60.

A. B. ALLEN & CO.

New York Agricultural Warehouse, 189 and 191 Water street, New York.
June, 1852—3t

TO THE AGRICULTURAL PLANTERS OF VIRGINIA.

COMPOUND CHEMICAL MANURES.—John K. Kettlewell's (late Kettlewell & Davison's,) Agricultural Depot, Baltimore, Maryland—Renovator, Generator, Biphosphates, Mixture of Potash and Plaster, Pure Ground Plaster, with every description of Chemical residium for the improvement of Crop and Land.

The undersigned, after five years' experience, and a very considerable outlay of capital, has finally triumphed over every obstacle of doubt and prejudice, and is prepared to demonstrate that, for Crop and Land, he can present to the public the cheapest and best manure known to the age.

His Compounds contain Ammonia, Potash, Biphosphate Soda, indeed every Chemical element, in a powerfully concentrated form, which the soil requires. Any one who doubts this can have his Salts analyzed at the expense of the undersigned, and if they fail in the test, he will return the money, if purchased.

In Wheat, he is willing to admit, that so powerful a stimulant as Guano, will, in many soils, produce a larger first crop, but very far less in a third crop, than his Salts. In Corn and Grass, he challenges a fair trial, upon any soil with Guano or any other manure—and for any forfeit that would make the experiment interesting For Corn and Grass, he avers that there is no Manure equal to his from a first to a fourth crop; and he is able to establish it by experimental proof.

His "BIPHOSPHATES" are pure, dissolved with the strongest Sulphuric Acid, and of Bones fresh. In England, no manure is in higher favor, or more sought after for Crop and Land.

His "RENOVATOR" is a Compound of every Chemical which science and experience have shown to be necessary to renovate worn-out land.

His "GENERATOR" is a compound made expressly for Tobacco, and is worthy the most careful investigation of the Planter.

His "PLASTER AND POTASH" is also manufactured for the growth of the Tobacco Plant, and when the almost absolute necessity of Potash is known, for the growth of prime leaf Tobacco, the value of this article may be readily estimated.

His "GROUND PLASTER" is so well known and so eagerly sought from the most distant sections of the Union, that he deems it only necessary to say, that below the standard he has adopted, the undersigned will never permit it to go. There is no article which the Farmer buys that he is more imposed upon, than in this one, of universal use.

In the January number of the American Farmer, the following reply is made by the editor of that valuable paper, in reply to the enquiries of a correspondent.

'Were we to plant Corn in land so poor, that when unaided by manure, would only

roduce five bushels of Wheat, we certainly would not rely upon less than four hundred ounds of Guano, producing a good crop."

Now, not relying upon less than four hundred pounds would certainly imply that an additional hundred pounds would do no harm.

Those four hundred pounds of Guano, with ransportation, would cost the Farmer not less han ten dollars per acre, which, with the exenses of cultivation, would require "a very ood crop" to remunerate, provided no durable enefit was rendered to the soil. Now, what ermanent benefit does Guano render to the and? What is its value, except the first crop? Does it operate like a similar powerful stimuant upon the human mind? with prodigious, lmost delirious excitement? to be followed y a commensurate depression and exhaustion? s Guano a stimulant or a manure?

These questions the experience of the Farner can best answer. But at the present rices of grain they are of vital importance; lthough in agricultural journals but little iscussed. In Pennsylvania, the most lasting nanure is called the best—further South, the irst yield is the standard. Now, when these Salts are intended for Corn, the undersigned ever recommends more than one barrel to the cre, (three dollars,) if applied in the hill—or wo barrels for the poorest worn-out land. If he Corn crop is to be followed with a Wheat rop one barrel in the hill, and one broadcast s recommended, slightly harrowed in—in this way, the Salts are more efficacious than when pplied with the Wheat at seeding time. For ating benefit to Land, these Salts are only ubordinate to fresh lime. As a top-dressing hey are certain and valuable.

The price of the Biphosphates are four dollars per barrel; the Renovator three dollars per barrel, or twenty one dollars per ton.

The price of the Tobacco Generator is four dollars per barrel; the Mixture of Potash and Ground Plaster two dollars and fifty cents per barrel; valuable for any crop, but indispensable for prime tobacco leaf. There is one dollar and fifty cents' worth of Potash in every barrel.

His Plaster is sold exclusively by Messrs. Deane & Brown of Richmond, and Messrs. Watkins & Morton of Petersburg.

Freight from Baltimore to Richmond and Petersburg, seventy-five to eighty-seven and a half cents per ton—transportation not being more expensive, counting teams and laborers, if as much so, as hauling out barn-yard manure. No man need make an extravagant experiment; therefore, no great risk is necessary to make a trial. The Agriculturist can order from the undersigned, to be shipped to Richmond or Petersburg, and to the care of each particular Agent, upon whom the undersigned can draw free of expense.

All sums under fifty dollars, cash; over fifty dollars, four months; over one hundred dollars, six months, for acceptances.

Instead of publishing certificates, which is more expensive and less satisfactory, the undersigned begs leave to refer to the following names. He has taken this liberty without consultation or permission of the parties named, but from their intelligence, success and enterprise as Agriculturists, and their character as gentlemen of the highest respectability and honor, he has no doubt but what they would cheerfully impart their experience and information, many of them having largely used these Salts. The postal direction of each party is affixed. It may be proper to observe that the Salts do not produce as heavy a stalk *in Corn*, as Guano. For its yield the farmer must look to the grain of the Corn.

REFERENCES.

Professor Higgins, State Chemist of Maryland, Baltimore, for its Chemical constituents; Rev. J. S. Armistead, Stony Point post office, Cumberland county, Va; Joseph W. Twyman, Esq. Earlysville, Albemarle county, Va.; John M. Dow, Esq. Washington City, D. C.; Dr. Wm. Mosher, Catonsville, Baltimore county, Md.; Dr. William Kirkwood, Prince Georges county, Md.; Wm. H Herbert, Esq. Beltsville, Prince Georges county, Md.; Seth W. Warfield, Esq. Sheriff Howard District, Md.; Dr. Wm. J. Saddler, Saddlersville, Queen Anne county, Md; W. W. W. Bowie, Esq. Prince Georges county, Md.; George E. Yeatman, Warrenton, Fauquier county, Va; General Henry S. Stiles, Cecil county, Md.; H. E. Bateman, Esq Easton, Talbot county, Md.; Arthur M'Court, Baltimore; Dr. Robert Dorsey, of Edward, Franklin, Baltimore county, Md.; John L Stavesberry, Treasurer of Baltimore county, Baltimore; Peter Gowan, Esq. Laurel, Howard county, Md.; Col. Horace Capron, Laurel, Md; Carrville S. Stansbury, Esq Baltimore county, Md., with hundreds of other names, but the above is amply sufficient for all practicable purposes. The Messrs. Barbours of Orange county, Va. have also used the Salts, with what effect the undersigned has never heard.

Pamphlets will be furnished to all who feel interest enough to investigate; and who are willing to believe that there may be progress in Agriculture, equal to other branches and enterprises of life.

JOHN KETTLEWELL.

Office at the Wholesale Drug Store of Ober & M'Conkey, corner of Lombard and Hanover streets.

Factory, Federal Hill, Baltimore, where, for personal investigation, I invite all persons that take an interest in Agricultural pursuits, who visit Baltimore, and to whom I will cheerfully explain my whole process. There is no secret in it.

Orders addressed to DEANE & BROWN, Richmond, Va. will be promptly attended to for John Kettlewell. mar 3t

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